Gas Journal

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Editorial Notes

Legislation to Come

It is a sad reflection upon the lack of any plan for the orderly development of a fuel policy that the Gas Industry of this country regards with a feeling of apprehension forthcoming legislation on electricity and coal. None of us can deny, however, that past experience, and especially the trend of affairs in the last twelve months, give us every reason to wonder what may be in store for the nation in the next Session of Parliament, what follies may be committed under sundry guises to perpetuate the muddles of post-war years. It is generally agreed, for example, to quote the words of Sir David Milne-Watson at the B.C.G.A. Conference, that " a legacy of confusion and parochial disorganization has hampered the sound development of electricity distribution." The McGowan Report, upon which legislation would presumably be based, was summed up by Sir David as " moving to one end—*unqualified and unconditional*—the increase of electrical sales." The confusion and disorganization of the past imply a day of reckoning ahead for somebody, and the italics which we have used above emphasize the danger of the situation. They appear to offer the opportunity for a big throw on what the gambler terms the " getting-out stakes." And if a big coup of this kind is contemplated on the basis of the McGowan Report, it is unfortunate that the Report gave no indication whatever of any consideration having been given to the ultimate effect of its recommendations on the consumer, on other fuel industries, or even on the electricity industry itself.

The Address which Sir David Milne-Watson gave at Manchester was not intended, of course, for home consumption only. It is to be hoped that its warnings will be heeded by those who are responsible for framing the forthcoming legislation; that they will be staggered in time, for example, at a realization of the capital cost which would be incurred were the electricity industry to be equipped to meet the Sunday cooking peak—a cost at least equal to that of the country's re-armament programme. It is to be hoped they will realize that the prosperity of the coal industry can be secured by other means than giving it powers to " delay the expansion of the gas and electricity industries by raising the price of their principal raw material, and so seeking to bias the consumer through a more favourable price relationship away from higher grade forms of heat and towards the raw product."

Purely destructive criticism rarely leads very far, and if it came from Sir David Milne-Watson, speaking in the circumstances and upon the subject we are discussing, it might indeed quite likely be brushed lightly aside as what he termed " one's own sectional bias." The whole Gas Industry will, however, most earnestly commend to the consideration of the Government his straightforward view as to the economic relationship which could, to the nation's benefit, subsist between the gas and electricity industries under reasonable and normal competition, and indeed between these two industries and coal. Sir David, be it noted, visualizes no elimination whatever of competition. " Competition," he maintains, " with each side working on a fair and economic basis, without hidden subsidies or distorting factors of any kind, is exactly what the Gas Industry would welcome."

It seems impossible that such reasoning as Sir David was able to put up on behalf of gas should go unheeded, yet there is no evidence whatever of any change of attitude on the part of the Government towards the whole problem of a national fuel policy. It remains to be seen whether, when the time comes, the outcome of the recent large-scale Parliamentary Inquiry will carry the weight which it merits. Let it be remembered that in that Inquiry the Gas Industry was, so to speak, forced into the position of defendant, and then that the judgment was neither negative nor neutral, but a positive vindication of all the rights the Industry has ever claimed.

Still on the Up Grade

When reviewing progress, a few weeks before the close of 1936, the remark was made in the "Journal" that we were approaching the end of a year which it was confidently anticipated would prove a very good one from the point of view of the Gas Industry. Figures of individual undertakings, both company and municipally controlled, which were subsequently made known provided ample justification for this confidence, and now further evidence of a like character is forthcoming through the official statistics contained in the Board of Trade Return relating to all authorized gas undertakings in Great Britain for the year 1936, Part I. of which, dealing with the manufacture and supply of gas, has been issued within the past few days by H.M. Stationery Office, Adastral House, Kingsway, London, W.C. 2, at the price of 4s. 6d. net, postage extra. On the present occasion there is an improvement of just about two months in the date of publication of these annual statistics, and in view of the regret which we have felt it our duty to express in the past with regard to the delay—unavoidable though it might have been—in the appearance of the Return, we hasten to make acknowledgment of this speeding-up. It is a gain which we feel sure will be appreciated in the Gas Industry, where the appearance of these comprehensive figures is naturally awaited with eager interest. If means exist whereby the compilation and publication of these official statistics can be still further expedited on future occasions, appreciation will be the keener.

As has been indicated above, the greater promptness of issue on the present occasion is all the more gratifying because of the pleasing nature of the position revealed. The year 1936 was not only a year of records, but one showing a substantially accelerated rate of progress. The period was one of expanding industrial activity, with an increase in employment, at higher rates of pay, and consequently with more money in circulation. Of a favourable situation such as this the Gas Industry was, and is, in an admirable position to take full advantage, so widespread are its activities, and so efficient is its organization. As yet there are no signs of any contraction of this industrial activity, and consequently there is no need to anticipate any lessening of business opportunities. So that we shall look forward to being, a year hence, in a position to record even greater steps forward than were taken in 1936.

Taking first the gas sales, as being the figure upon which all else depends, it is seen that last year these showed an increase of 4·8% over those of 1935. Getting on for 5%—and added, not to a pathetically small, but to an enormously large, total. A good performance, in a well cultivated field, upon which the Gas Industry is entitled to congratulation. Just what an increase of 4·8% in 1936 meant was an addition of 14,079 million cu.ft. to the total quantity of gas sold. Glancing at the "Journal" "Calendar and Directory," it is seen that this increase alone represents not so very far from the total sales of Birmingham, one of our foremost industrial cities, and certainly one of the most gas-minded. And it is getting on for three times the gain recorded in 1935, when the gas sales increased by 5,193 million cu.ft. over the figure for 1934, which represented a gain of 1·8%. In 1934 an increase in sales of 1·6% was registered.

The Return shows that the quantity of gas made (including gas that was bought from coke ovens) during 1936 was 334,049 million cu.ft., or 14,707 million cu.ft. more than in 1935. As this represents an increase of 4·6%, whereas the quantity sold increased, as already mentioned, by 4·8%, there stands revealed another aspect of the figures upon which the Gas Industry is entitled to its meed of congratulation. The actual quantity of gas sold last year was 309,936 million cu.ft., including that which was supplied separately for industrial purposes only.

Features of the Return

There is a continuation in the Return before us of what has been a feature for a good many years past—a fall in the number of authorized undertakings included. Though the fall in the total on the present occasion (from 718 to 714 undertakings) would seem at first sight to indicate a considerable slowing-down in the process of contraction when compared with some previous years, the facts relating to changes of ownership during the year 1936 are not quite in line with the net result, because of the fact that some half-dozen concerns which had not hitherto been numbered among the authorized undertakings made their appearance for the first time in that year. Thus there were about ten absorptions during the year. Dividing them up, it is found that on the present occasion there are included 406 company and 308 local authority undertakings.

The total number of therms sold by all the authorized undertakings in 1936 was 1,467,484,259, which figure includes an estimate for those undertakings not authorized to charge on a thermal basis. The number of therms sold in 1935, calculated similarly, was 1,404,900,589, and in 1934 it was 1,382,728,861. Once again there is a big increase in the quantity of coke oven gas utilized, which has to be taken into account when considering the proportions of gas produced by different processes. An increase of 14,444 million cu.ft., or 5·5%, occurred in the quantity of coal gas made, while the amount of water gas produced decreased by 4,896 million cu.ft., or 15·1%. These figures, of course, are reflected in the quantities of materials used in gas making. The coal carbonized was 1,040,000 tons more than in 1935; but the amounts of coke and oil utilized in the manufacture of water gas were less than in that year by 95,000 tons and 9,172,000 gallons respectively. The quantity of coke and breeze made during 1936 increased by 745,000 tons, while the amount of tar produced was more by 13,882,000 gallons. The production of sulphate of ammonia increased by 9,644 tons. The actual makes during the year were: Coke and breeze, 12,286,000 tons; tar, 233,656,000 gallons; and sulphate of ammonia, 86,345 tons.

Turning to other columns, it appears that the quantities of materials utilized in the manufacture of gas were as follows: Coal, 18,334,000 tons; coke for water and producer gas, 545,000 tons; and oil for carburetting, 32,507,000 gallons. The gas production figures are: From the carbonization of coal, 274,949 million cu.ft.; water gas in separate generators, 27,458 million cu.ft.; total, including coke oven gas, and a certain quantity produced from other materials, 334,049 million cu.ft. There were during the year a dozen alterations in declared calorific value, most of them in the downward direction. The increases, however, were all to 500 B.Th.U., while one of the reductions was to this figure.

Mention has been made above of a further big increase in the quantity of coke oven gas bought and distributed by the Gas Industry. The amount of gas bought from owners of coke ovens during 1936, and distributed by statutory gas undertakings, was 24,329 million cu.ft., which was 3,875 million cu.ft., or 18·9%, more than in 1935. At the end of 1936 the number of purchasing undertakings still remained at forty, to which it had been

raised in the previous year. The largest quantity was again purchased by the Sheffield Gas Company, who took 8,361 million cu.ft., while the Newcastle-upon-Tyne and Gateshead Gas Company came next with 3,050 millions, followed by the Derby Gas Light and Coke Company with 1,442 millions, the Middlesbrough Corporation with 1,299 millions, and the Rotherham Corporation with 1,071 millions.

More Consumers

In a world that appears to be living to an ever increasing extent upon credit, the Gas Industry is able invariably to show an increase in the number of its prepayment consumers. This, of course, does not necessarily denote any deliberate endeavour by consumers to run counter to modern trends in connection with their gas supply, because apparatus is taken in thousands on hire-purchase and deferred-payment terms, but, though it may be accounted for in various ways, it is a striking feature of gas distribution to-day. Many will think, too, that, in spite of the proportionately heavier capital outlay involved, it is a satisfactory feature from the point of view of the Industry, in that it introduces a particularly stable class of business.

It will be seen from the comparative table which is reproduced elsewhere in the "JOURNAL" that for some years past (and the tendency has prevailed over a longer period than that shown) there has been an increase of round about 200,000 per annum in the number of prepayment consumers. In 1936, such consumers numbered 6,802,523, which compares with 6,559,123 for the year before. This increase is very nearly the same as the increase in the total number of consumers, though there does fall to be recorded on the present occasion a trifling gain in the number of ordinary consumers, to set-off against the reductions experienced in the two years immediately preceding. The total consumers in 1936 were 10,775,444, and in 1935 10,516,759. This is an increase of 258,685, or 2·5%. The figures quoted for the prepayment and total consumers leave a difference of no more than 3,972,921 to be classed as ordinary consumers.

This increase of 2·5% in the total number of consumers has to be placed side by side with the increase of 4·8% in the quantity of gas sold. Though it is only reasonable to assume that the figures have been influenced largely by the increase in the industrial load (following upon more prosperous business conditions, the introduction of favourable tariffs, and keen work by sales staffs), we feel entitled to regard with some satisfaction the fact that the increase in gas consumption is a bigger percentage than the increase in the total number of consumers. When commenting a year ago upon the 1935 Return, we pointed out that an increase of 2·3% in the total number of consumers coincided with an increase of only 1·8% in the total quantity of gas sold, in spite of the fact that this total included a substantially larger amount than in the previous year of gas supplied separately for industrial purposes only. The year 1936 has produced a decided improvement upon these figures.

In saying this, it must be pointed out that there is once again a big increase in the quantity of gas supplied separately for industrial purposes only through a special main. The number of undertakings so supplying gas remained, in 1936, at five, and the total quantity of gas involved was 7,774 million cu.ft., which compares with 6,445 millions supplied by the same five undertakings in 1935. Again, of course, the great bulk of the total amount was furnished by the South Staffordshire Mond Gas Company, with 6,350 million cu.ft. The four other undertakings, and the quantities supplied, were: Rotherham Corporation, 322 million cu.ft.; Sheffield Gas Company, 409 millions; Swinton and Mexborough Gas Board, 664 millions; and the Wombwell Urban District Council, 27 millions. When all things are considered, therefore, and in particular the large increase in the amount of gas supplied separately for industrial purposes only, though the relationship between percentage increase in consumers and percentage increase in consumption made a better showing in 1936, there remains plenty of room for still further improvement in the consumption per consumer figure, and to secure this we know that the Gas Industry will continue to put forth its best efforts—efforts which must include, or be accompanied by, promotional tariffs.

Finally, attention may be drawn to the quantity of gas sold to local authorities for public lamps. This is a figure which for the past ten years has been continuously on the up-grade, until in 1936 it reached 13,907 million cu.ft. What this load means to the Gas Industry may be gathered from the fact that the 13,907 million cu.ft. for public lighting compares with a total of 116,608 millions supplied to prepayment consumers, and 171,644 millions to other consumers. And not only because of its magnitude, but also because of its importance from the point of view of propaganda, is this load of inestimable value to the Gas Industry. "Look after your public lighting" must be a sound slogan for gas men. But why confine it to *public* lighting?

1937 "JOURNAL" DIRECTORY

Page 10. BRIGG. C. E Smith appointed E. & M.
Page 14. CALDICOT. Undertaking acquired by Severn Valley Gas Corporation.
Page 22. DOVER. J. J. Paterson, M. & R.E., retired.
Page 26. FERNDALE. G. E. Childs, E., M., & S., resigned.
Page 44. MANCHESTER. J. H. Sillitoe, C.M. & S., deceased.
Page 66. SUNDERLAND. C. C. Walmsley appointed G.M. & S.
Page 74. WESTHOUGHTON. R. V. Hart appointed E., M., & S., vice C. E. Smith, resigned.
Page 78. ALYTH. A. D. Coubrough, E. & M., retired.
Page 136. ORIENTAL. A W. Hentsch appointed S. vice S. Rainer, deceased.

Traffic Signals in 1868

Illuminated by Gas

In a letter published in *The Times* of Sept. 30 a correspondent refers to traffic signals in the year 1868.

"A signal illuminated by gas," he explains, "was put up at the junction of Parliament Street with Bridge Street, Westminster, where it 'showed a green light under ordinary circumstances and a red one when a Member of Parliament is crossing Bridge Street on his way to St. Stephen's, or when any other equally important occasion renders a halt of vehicles necessary.'

"The experiment met with universal approval, but unfortunately came to an abrupt and undeserved end. There had been a slight escape from one of the mains near the signal which found its way into the pillar supporting the semaphore arms. One day the constable on duty opened the door to turn off the gas, thus admitting enough air to mix with the gas that had accumulated in the lantern to cause an explosion, which blew his helmet off and 'rendered him partially stripped.'

"Despite the fact that the mishap was due to no defect in the apparatus orders were given for its removal. There seems little doubt that the removal would not have been made if the signal had not been close to the Houses of Parliament, the members of which had vividly in their memories the recent Fenian Riots, and were perhaps fearful that what was actually a slight mishap might be attributed by the ill-informed public to political machinations."

Correspondence

Smoke Abatement

SIR,—May I thank you, on behalf of my Society, for your editorial paragraph on smoke abatement in this week's issue? We sincerely hope the Gas Industry, as you suggest, may be able to do more in the future to help the movement, even though the Society itself is grateful for the support the Industry has always given.

The reason for the recent transfer of our headquarters from Manchester to London is to extend our activities in the numerous ways that are waiting, but as our total income is at present little more than £1,000 a year, it is obvious that we must seek to increase our membership and resources before we can carry out our plans. Without undue lack of modesty I think we may say we have done good work on such a small amount, and I hope the Gas Industry will appreciate how much more we shall be able to do when we have doubled or (being optimistic) trebled our income.

Yours, &c.,
ARNOLD MARSH,
General Secretary,
National Smoke Abatement Society.

64, Buckingham Gate, S.W. 1,
Sept. 30, 1937.

Town Gas and Cancer

SIR,—I feel sure that everybody must have been amused when reading about the "Amazing Theory" commented upon on p. 729 of the "JOURNAL" for Sept. 22.

I discussed the problem with some members of the medical profession—men specially well acquainted with the extension of cancer, and they informed me that in all probability, and as far as they could tell, cancer is as prevalent in districts without gas supply, and where electricity only is used, as in districts supplied with gas.

What about the amazing theory, then?

It is true, of course, that gas has extended very much during the last few decades, but what about electricity, exhaust from motor-cars, and the universally prevalent radio wave, not to mention cigarette smoking? All these have increased proportionately more than has the use of gas, and as the medical profession at the present time knows nothing, or next to nothing, about the origin of cancer, and as this disease also occurs in increasing quantity where gas is not used, simple logic seems to rule out gas as the origin.

Even the very circumstantial evidence that radio waves which penetrate every person on earth have increased enormously during the last few years hardly seems sufficient to put the blame on this benefactor of man, any more than on cosmic rays.

In the absence of any proof whatever, it seems absurd to put the blame on any of these possible causes, especially on gas, which is non-existent in many districts where cancer is prevalent.

I found the attack on gas so amusing in its childish absurdity that I cannot help sending you this little note.

Yours, &c.,
JOHN IRMINGER,
General Manager and Chief Engineer.

Gas-Works, Bergen, Norway,
Sept. 30, 1937.

Personal

Sunderland Appointments.

Mr. CHARLES C. WALMSLEY, F.C.I.S., F.I.A.C., Accountant to the Worcester New Gas Light Company, has been appointed General Manager and Secretary of Sunderland Gas Company in succession to the late Mr. J. H. Curry.

Mr. Walmsley received his early education and training at Accrington, and, following a period of service in the Town Clerk's Office, he was for eleven years with the Accrington District Gas and Water Board as Commercial Assistant. He has been Accountant to the Worcester New Gas Light Company for the past four years, and prior to that held a similar position with the Preston Gas Company.

During the war Mr. Walmsley held commissioned rank in the Army and served in France.

Mr. W. L. ROBERTSHAW, M.Inst.Gas E., who has held the position of Works Manager at Ayre's Quay Gas Works for 22 years, has been appointed Engineer. He was trained with Messrs. R. & J. Dempster, Ltd., of Manchester, and subsequently held appointments on the staff of Shrewsbury Gas Company and Para (North Brazil) Gas Company prior to joining the staff of Sunderland Gas Company in 1912.

Mr. F. P. FALL, Assoc.M.Inst.Gas E., who has been Chief Draughtsman for 22 years, has been appointed Assistant to the Engineer. He was trained under Messrs. W. C. Holmes & Co., Ltd., of Huddersfield, and has been in the service of Sunderland Gas Company for 28 years.

Mr. C. F. BARROW, A.M.I.G.E., retains his position as Distribution Superintendent.

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Mr. F. E. WARD, whose retirement from the position of Engineer and Manager at St. Helens was recently announced in these columns, was presented with an illuminated address in recognition of his forty years' service in the Gas Department at a luncheon on Sept. 30.

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After fifteen years' service, Mr. JOHN JAMES PATERSON, Manager and Residential Engineer of the Dover Gas Company, has retired. At a recent gathering of the Company's Social Club, Mr. Paterson was presented with a silver cigarette case by the Chairman, Mr. P. E. Dunn, who expressed appreciation of Mr. Paterson's work for the Company. Mr. W. A. Buckman presented Mr. Paterson with a gift on behalf of the employees of the Company.

Obituary

The death is announced of Sir WILLIAM RAY at the age of sixty-one. Sir William, as Leader of the Municipal Reform Society, controlled the Local Government of London for nine years until 1934. He was Knighted in 1929, elected Conservative Member for Richmond three years later, and at the General Election of 1935, returned by a large majority. In 1933 he was appointed, at a salary of £5,000 a year, Executive Chairman of the British Electrical Development Association.

Hydrogenation-Cracking of Tars*

Fuel Research Technical Paper

The Department of Scientific and Industrial Research has just issued a report entitled "The Hydrogenation-Cracking of Tars, Part III.—The Effect of Certain Variables in a Continuous Plant." The possible variables in such a plant are the concentration of the catalyst on the support, the size of the catalyst granules, the nature of the raw material, the temperature, the pressure, the time of contact, and the relative concentrations of tar and hydrogen. In studying these, each factor was varied independently of the other, and attention was paid chiefly to their effect on the activity of the catalyst, which was measured by the degree of conversion of the tar to spirit. Since the activity of the catalyst is not constant, but falls slowly as hydrogenation-cracking proceeds, it is important to choose conditions which not only give a high initial degree of conversion but which cause the least possible reduction in the activity of the catalyst as the conversion proceeds.

While economic as well as technical considerations will play a part in fixing such conditions in the working of a commercial plant, it is evident that a knowledge of the effects of the variables mentioned is necessary in determining the optimum working conditions. The results of the experiments show that the initial activity and rate of deterioration of the catalyst are not necessarily, or even usually, affected in the same manner or to the same degree by changes in a particular variable. For instance, within certain limits a rise in temperature of the reacting materials produces initially a marked increase in the yield of spirit, but this is offset to some extent by the rapid deterioration of the catalyst. The temperature should therefore be chosen so as to give a maximum yield of spirit over a given period of time. On the other hand, an increase of pressure, while producing only a slight improvement in the initial yield, greatly reduces the rate of deterioration of the catalyst, so that good yields are maintained over a longer period. Similar considerations, it is shown, apply to changes in the other variables.

The experiments described in the report were carried out in two small-scale plants, one having a throughput of 200 ml. of tar or tar oil per hour, and the other a throughput of 12 ml. per hour. The experience gained, it is stated, has proved of value in the design and operation of a semi-technical-scale plant capable of treating from 200 to 400 gallons of tar per day.

* "The Hydrogenation-Cracking of Tars, Part III —The Effect of Certain Variables in a Continuous Plant." Published by H.M. Stationery Office; price, 1s. net.

News in Brief

CURRENT EVENTS IN THE GAS INDUSTRY

Powers to Borrow £5,000 for capital expenditure on gas mains is being sought by the Blackburn Gas Department.

The Tully Plant recently installed by the Duns Gas Light Company is now in operation and giving every satisfaction.

For Extensions to the Gas Undertaking's mains the Redcar Town Council are seeking powers to borrow £10,000.

As a Coronation Gift from the Coldstream Gas Company, there has been erected in High Street a 300-candle power lamp.

Application for a Special Order is intended to be made to the Board of Trade under the Gas Undertakings Acts, 1920 to 1934, by the Dawlish Gas and Coke Company.

We Have Received from the publisher of *Sands, Clays, and Minerals*, Mr. A. L. Curtis, Chatteris, Cambridgeshire, a copy of the latest issue, containing many articles of interest to the mineralogist.

A Declaration of Calorific Value has been made by the Ormskirk District Gas Company, who state that on and after Jan. 1, 1938, the gas supplied by the Company will be 470 B.Th.U. per cu.ft.

A Visit was paid to the Works of the Stockton Gas Department last week by the Newcastle and District Association of the Institution of Civil Engineers, who were welcomed by Councillor W. H. Hodgson, Chairman of the Lighting and Power Committee.

An Increase in the Price of Gas of 2d. per 1,000 cu.ft. has been agreed upon by the Elgin Town Council. The charge for domestic consumers is now 3s. per 1,000 cu.ft. and for industrial purposes 2s. 6d. per 1,000 cu.ft. The increase has been rendered necessary by the rising cost of coal and carriage.

Changes in Calorific Value are announced in the *London Gazette* by the following gas undertakings, to come into effect as from the beginning of next year: Haywards Heath District Gas Company, 450 B.Th.U. instead of 425 B.Th.U.; and Worksop Gas Company, 500 B.Th.U. instead of 470 B.Th.U.

A Ten-Years' Contract for the whole of the street lighting, which also includes Lochose and district, has been obtained by the Kelty Gas Company. Another very satisfactory feature is that over 360 new houses in the course of erection are to be fitted with gas cookers, boilers, and fires, and a gas light in each living room.

In View of Greatly Increased Consumption, the Grangemouth Town Council decided at a recent meeting that it was necessary to have additional storage capacity, the present capacity being inadequate for the maximum peak demand. The Gas Engineer and Manager, Mr. T. A. Rowan, recommended a gasholder of 500,000 cu.ft. capacity.

If the Prices Prevailing fifteen years ago had been in force to-day, the consumers of the Lytham St. Annes Gas Department would have paid £11,800 more for their gas. This interesting illustration of the extent of the concessions made to their consumers was drawn by Alderman J. H. Dawson, in reviewing the progress of the Department during the past year.

The Institution of a Pupilage Scheme for training candidates for various positions in the Irish Gas Industry was intimated by the Chairman, Mr. F. J. Dickens, at the recent annual meeting of the Alliance and Dublin Consumers' Gas Company. Under this scheme suitable candidates might be sent to Great Britain and America to become familiar with modern gas practice.

The Annual Report of the Electricity and Gas Inspection Services of the Canadian Department of Trade and Commerce for the year ended March 31, 1937, states that 16,577 million cu.ft. of manufactured gas were sold during the year, an increase of 67 million cu.ft. Calorific tests numbering 3,267 were made throughout the Dominion and the average heating value was found to be 480·5 B.Th.U. per cu.ft. The standard required is 450 B.Th.U. per cu.ft. The amount of natural gas supplied throughout Canada during this period was 30,291 million cu.ft., an increase of 956 million cu.ft. over the previous year.

Birkenhead Town Council is to be asked to approve the preparation of plans and specifications for the erection of a new gasholder with a capacity of from 2½ to 3 million cu.ft. It is estimated that the cost will be in the neighbourhood of £60,000, which, on the basis of repayment within a period of thirty years, represents an annual charge of £3,413.

Gas Cookery Demonstrations are now being held by the Kilmarnock Gas Department in collaboration with Messrs. R. & A. Main, Ltd., in the Art Hall, Kilmarnock. The demonstrations were inaugurated by the Convener of the Gas Committee, Dean of Guild James Brice, on Oct. 4, and they will be concluded on Friday. The demonstrator is Miss Olive Edwards, of Messrs. R. & A. Main.

A New Gasholder of 3 million cu.ft. capacity, which the Gas Department propose to erect on a site in Valley Street North, Darlington, was the subject of a recent Board of Trade enquiry conducted by the Director of Gas Administration, Mr. James F. Ronca. The Town Council had made application to the Board of Trade for a Special Order authorizing them to acquire the Valley Street North site, and several owners of houses in the neighbourhood had raised objections to the proposed gasholder, as they alleged it would lead to a depreciation of the value of their property. In the course of the enquiry, the Town Clerk, Mr. H. Hopkins, stated it would be dangerous for the town to rely on the present storage capacity, which provided less than a day's supply.

Robinson Bindley Processes, Ltd., is the name of a recently-formed Company, of which Mr. W. H. McConnel is the Chairman. A small commercial plant is being erected at one of Messrs. Baird's collieries in Scotland, and it is hoped that it will be in operation early next year. The Robinson Bindley Process was first developed in America for the production by synthesis from natural petroleum of a special type of motor fuel known as iso-octane. This spirit is being produced in America at the rate of 50,000 gallons per day, and its production in other parts of the world is being actively developed. The interest of the Sheepbridge Coal and Iron Company, of which Mr. McConnel is Chairman, in the process lies in the fact that their product, the raw material being coal, is claimed to be more suitable for iso-octane development than natural oil.

Concerning the Gas Industry of Northern Ireland, some interesting facts have recently been published in the Census of Production of Northern Ireland, 1935. The preceding census related to 1930. The total quantity of coal gas produced in 1924 was 3,508 million cu.ft.; in 1930, 4,150 million cu.ft.; and in 1935, 4,573 million cu.ft. The corresponding figures for water and producer gas are: 1924, 1,075 million cu.ft.; 1930, 1,150 million cu.ft.; and 1935, 1,155 million cu.ft. On machinery and plant, £26,000 was spent in 1935 and £32,000 in 1930. The total cost of materials used in the works mentioned in the Census—viz., ten municipal authorities and seven companies, other undertakings by reason of their size not coming within the scope of the Census—was £500,000 in 1924, £485,000 in 1930, and £410,000 in 1935. The number of operatives employed has risen from 1,257 in 1924 to 1,445 in 1935.

Kitchen Planning

By Film and Brochure

Many who had the opportunity in Manchester last week of a private view of the new gas films will be making their arrangements for showing them this winter. Among their number is "Pots and Plans," and we would remind our readers of the opportunity they will have of reinforcing the appeal of this kitchen planning film by the distribution to selected audiences of Walter King's "New Kitchens for Old."

The sales of this brochure are approaching the 35,000 mark, so that it is already widely known in the Industry. Those who have not yet seen it are invited to study the announcement on p. 91 of this issue, and to apply to the publishers for a specimen copy.

Amalgamation and Grouping

Shanklin and Ventnor and Sandown.

On Oct. 1 the amalgamation of the Shanklin and Ventnor Gas Company and the Sandown Gas and Coke Company, Ltd., was completed.

This fusion of interests is the final outcome of negotiations which have extended over two years. One result of the amalgamation has been the laying of a 6-in. high-pressure main from the Shanklin Works to those at Sandown.

The manufacture of gas at the Sandown Works has already ceased and for the past few days Sandown, Shanklin, and Ventnor have been supplied with gas made at Shanklin, where the Works, already thoroughly modern, have recently been extended and still further improved so as to ensure an efficient public service.

The difficulty of finding a title for an amalgamation which concerns three communities has been overcome by giving the undertaking an entirely new name—The East Wight Gas Company.

So far as the personnel of the Board of Directors is concerned, the four Directors of the Shanklin and Ventnor Gas Company—viz., Messrs. W. T. Deeks (Chairman), Walter Russell, F. Taylor, and V. G. Middleton—are to continue on the new Board and will be joined by Messrs. W. H. Findon (Chairman) and G. Ballantyne, two members of the Board of the Sandown Company. Their two colleagues, Messrs. P. H. Compton and A. W. Oke, will be retiring. Mr. Leslie G. Payne, who has been in control of the Shanklin Works for some time and under whose direction the plant has been modernized, is to continue in the position of Engineer, Manager, and Secretary, and will have as Assistant Manager and Engineer Mr. J. P. Hall, the present Engineer and Manager of the Sandown Company, and as Assistant Secretary Mr. W. C. Woodward, the present Secretary of the Sandown Company.

United Kingdom and Bedford

Close Brothers, Ltd., Secretaries of the United Kingdom Gas Corporation, Ltd., announce that the Corporation has just completed the purchase of over 89% of the consolidated ordinary stock of the Bedford District Gas Company. This Company is adjacent to the Woburn, Winslow, Leighton Buzzard, Aylesbury, and Thame Gas Companies already owned by the Corporation.

Price of Gas Reduced at Buxton

New Plant's Successful Year's Operation

Despite the rising cost of materials, owing to a highly satisfactory year's operations, it has been resolved by the Buxton Gas Committee that the following reductions in charges for gas be made commencing from the date of quarterly meter readings taken during the present month: (*a*) The 7¾d. per therm rate be reduced to 7½d., and the 7½d. per therm rate be reduced to 7d. on ordinary meter consumption; (*b*) the cash discount paid annually on the prepayment meter collections be increased from the present 1¼d. per 1s. rate to 1½d. per 1s. on the first £2 and thereafter 2d. per 1s. on the amount exceeding £2 per annum; (*c*) the gas engine rate be reduced from 7d. to 6½d. per therm; and (*d*) the street lighting rate be reduced in accordance with the Gas Engineer's recommendations, which show a reduction on the existing annual gas consumption of £154.

Councillor Potter, presenting the report of the Gas Committee at a meeting of the Borough Council, drew attention to the financial statement and the reduced charges. "They represent the first complete year's working of the new vertical retort plant," said Councillor Potter. "These improved results, I feel, amply justify the change made in production method, especially when there is taken into consideration the fact that the Undertaking has had to meet increased costs in coal, labour, and all materials used in gas production.

"I wish (and in this I feel I have the whole Committee with me) to congratulate your Gas Engineer and Manager, Mr. F. G. Shaw, on the way the whole scheme was planned and carried through. Many of the details in design were made on his initiative, and his intensive and careful supervision during the erection of the plant has resulted in your possessing a first-class and thoroughly up-to-date works.

"I also wish to pay tribute to the contractors, West's Gas Improvement Company, who have given the Council a square deal and with whom business relations have been of the pleasantest." The Gas Committee's report was adopted.

Forthcoming Engagements

Oct.

7.—I.G.E.—Joint Committee on Complete Gasification under Pressure, 3 p.m.

7.—Southern Association.—Meeting of General Committee, Gas Industry House, 2.30 p.m.

7.—Midland Junior.—Opening Meeting and Presidential Address of E. T. Pickering (Birmingham).

8.—North of England Association.—Autumn Meeting at Willington.

9.—Scottish Western Juniors.—Meeting at Glasgow. Presidential Address of R. A. MacLaren (Newton-on-Ayr).

12.—I.G.E.—Board of Examiners, 10.30 p.m.

12.—Federation of Gas Employers.—Central Committee, Gas Industry House, 11.30 a.m.

12.—N.G.C.—Central Executive Board, Gas Industry House, 2.30 p.m.

13.—I.G.E.—Finance Committee, 9.30 a.m.; Membership Committee, 10 a.m.; General Purposes Committee, 11 a.m.; Benevolent Fund Committee of Management, 12.30 p.m.; Council, 2.30 p.m.

13.—Coke Salesmen's Circle.—Meeting at Gas Industry House, 2.30 p.m.

14.—Eastern Counties Association.—Autumn Meeting at Bedford.

16.—Western Juniors.—Meeting at Stroud. Paper by Mr. W. Barber.

16.—Yorkshire Juniors.—Annual General Meeting at Leeds.

19.—I.G.E.—Gas Education Executive Committee, 11 a.m.; Gas Education Committee, 2.30 p.m.

19.—London and Southern Juniors.—Opening Meeting and Presidential Address of R. N. LeFevre.

20.—B.C.G.A.—Southern District Conference at Swindon.

21.—Midland Juniors.—Meeting and Paper by F. J. Bengough on "Purging of Water-Sealed Gasholders."

23.—Scottish Western Juniors.—Visit to Paisley Gas-Works.

25.—London and Counties Coke Association.—Executive Committee, 11 a.m., and Central Committee, 12 noon, at Gas Industry House. Luncheon, 1.15 p.m., and Annual General Meeting, 3 p.m., at the Mayfair Hotel, Berkeley Street.

26.—B.C.G.A.—Eastern District Conference at Lincoln.

27.—B.C.G.A.—Northern District Conference at Darlington.

28.—Coke Oven Managers' Association.—Annual Dinner, Hotel Victoria, London.

Nov.

2.—I.G.E.—Council, 9.30 a.m.; Council (*continued*), 4.30 p.m.

2 and 3.—I.G.E.—Autumn Research Meeting.

3.—B.G.F.—Annual Dinner, Grosvenor House.

3.—British Gas Federation.—Annual General Meeting and Dinner, Grosvenor House, Park Lane, W. 1.

3.—Scottish Western Juniors.—Visit to India Tyre Company, Ltd., Inchinnan.

4.—S.B.G.I.—Autumn Meeting, May Fair Hotel. Council, 11 a.m.

4.—Midland Juniors.—Visit to Fuel Research Station, East Greenwich.

6.—Scottish Eastern Juniors.—Short-Paper Day at Edinburgh.

13.—Scottish Western Juniors.—Meeting and Paper by D. S. Davies on "Gas as Applied to the Textile Industry."

13.—Western Juniors.—Visit to Torquay. Paper on "Practical and Theoretical Aspects of Crude Benzole Recovery," by F. A. Butt.

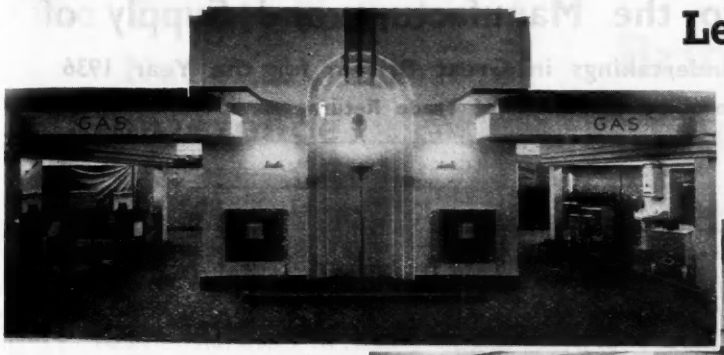
18.—Midland Association.—Autumn General Meeting. Grand Hotel, Birmingham.

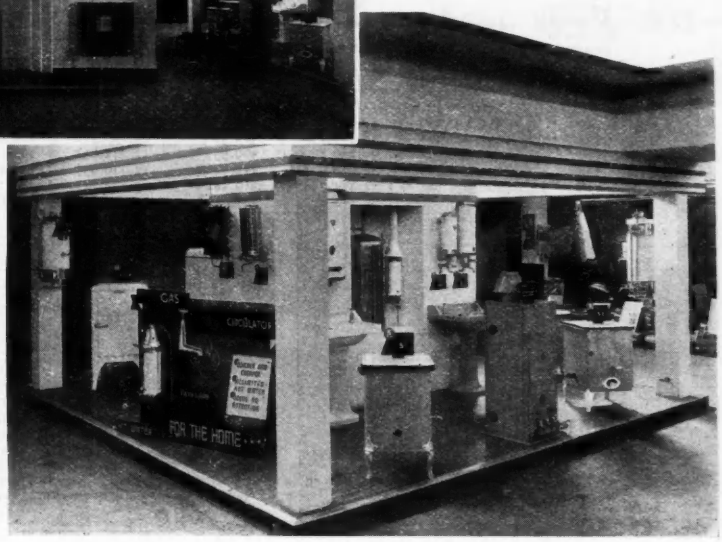
18.—Midland Juniors.—Meeting and Paper by E. Haden on "Temperatures."

19.—Southern Association.—General Meeting, Hotel Victoria, 2.30 p.m. Paper by W. A. Bishop (Croydon) on "Large-Scale Heating by Gas." Committee meeting precedes at 12 noon.

27.—Scottish Western Juniors.—Visit to Auchengeich Coke Ovens.

Leicester Home Life Exhibition





Here are two illustrations of the excellent exhibit arranged by the Leicester Gas Department at the fifteenth Leicester "Home Life" Exhibition. We learn from Mr. James Mitchell, Engineer and Manager, that the Gas Department were again rewarded by the success that has each year attended their efforts at this Exhibition.

New Consett Showrooms

Progress of the Company

An important step in the history of the Shotley Bridge and Consett District Gas Company was marked on Sept. 17 by the opening of the spacious headquarters of the Company which have been built in Thomas Street, Consett, by Councillor J. R. Ashby, Chairman of the Consett Urban Council. Since 1856, when the Company commenced to supply gas to the area, the head offices and showroom have been situated at Shotley Bridge.

On its formation, the Company possessed a capital of £11,905, and in 1869 an Act of Parliament was obtained incorporating the present Gas Company with a capital of £30,000. So well has the Undertaking flourished that during the last half century the gas consumption has increased from 31 million cu.ft. in 1887 to 90 million cu.ft. in 1936.

Much of the credit for the excellent progress which has been made is due to the capable management of its affairs by the pioneers, whose acumen and foresight resulted in the Company being placed on a sound basis. This example has been consistently followed, and the success of the Company's operations in the future can be regarded in very optimistic light. The decision of the Company to erect new premises in Consett was the outcome of a growing demand for gas service in a district which is increasing in population and industrial importance.

A striking feature of the new buildings, which occupy a prominent position at the end of a main thoroughfare, is the imposing frontage which has been completed in the modern Faience Tile design. It is undoubtedly one of the most impressive in the whole of North-West Durham and should prove a decided asset to the architectural amenities of the town. Up-to-date in every respect, the buildings, which have been in course of erection for ten months, include showrooms, roomy offices with splendid equipment, and a boardroom.

The architect was Mr. T. H. Murray, and the work has been supervised by Mr. Wake. The general lay-out of the interior, fire displays, lighting, &c., was designed and carried out by Mr. A. G. I. Anderson, A.M.I.Chem.E., General Manager and Secretary of the Company.

Speaking at the opening of the new showrooms and offices, Mr. J. M. Nicholson (Deputy Chairman of the Company), who presided in the absence through indisposition of Col. W. H. Ritson (Chairman), said it was a great pleasure for him to welcome that day members of the Council and residents. They particularly appreciated the kindness of Councillor Ashby, who had spared the time from his many other public duties to come to open the premises.

Councillor Ashby, in declaring the building open, expressed his pleasure at being invited to perform the ceremony. "I always like to see enterprise and progress," he said, "and I feel that a building such as this is an achievement which every public man must look upon with great delight. To see your appliances and the things you are offering to the public is also a great pleasure."

Lieut.-Col. C. Ward Ritson, O.B.E. (Director), proposed a vote of thanks to Councillor Ashby. Mr. T. H. Murray (Architect), on behalf of the contractors, presented Councillor Ashby with a memento of the occasion. He expressed thanks to the contractors for their excellent work and the help which had been given by Mr. A. G. I. Anderson.

Modern Gas Heaters

List of Messrs. Falk, Stadelmann

A recently issued list of Messrs. Falk, Stadelmann, & Co., Ltd., Veritas House, 83-93, Farringdon Road, E.C.1, presents a varied range of portable gas heaters which, it is stated, are suitable for modern households. The latest types included in the catalogue are the new "Rayflex," the "Portal," and the "Rayvec." These models are constructed on scientific lines and can be used with perfect safety.

For the heating of shops, churches, offices, and hotels, the "Supervector" panel heaters are suitable on account of their ingenious construction, which ensures a constant stream of warm air being passed into the room without stuffiness or draughts. This model is especially suitable in meeting the requirements of the Shops Act, 1934, in the provision and maintenance of a reasonable temperature. Great simplicity in fixing is claimed for the "Improved Simplon."

A modern and distinctive model, to which passing reference is made in the list, is the "Silo-Matchless" fire.

This model can be supplied in a variety of colours.

Particulars Relating to the Manufacture and Supply of Gas

By Authorized Gas Undertakings in Great Britain for the Year 1936

As Shown by the Board of Trade Return‡

Year.	Number of Authorized Undertakings Included in Return.	Quantity of Gas. Made. Gas from Carbonization of Coal.	Made. Water Gas in Separate Generators.	Made. Total Made.	Sold. To Local Authorities for Public Lamps.	Sold. To Prepayment Consumers.	Sold. To Other Consumers.	Sold. Total Sold.	Length of Gas Mains.
		1,000 Cu Ft.	1,000 Cu.Ft.	Million Cu.Ft.	1,000 Cu.Ft.	1,000 Cu.Ft.	1,000 Cu.Ft.	Million C..Ft.	Miles.
1931	749	254,350, 50	40,803,280	313,753*	11,787,528	110,510,440	168,394,815	290,693	51,807
1932	734	251,018,508	38,468,132	309,336*	12,130,576	109,974,360	164,883,077	286,988	53,156
1933	727	249,179,563	39,236,880	309,557*	12,242,631	111,666,260	162,235,458	286,144	54,916
1934	726	257,118,239	32,610,918	313,546*	12,640,257	112,481,528	159,998,266	290,664†	56,928
1935	718	260,505,328	32,354,744	319,342*	13,306,742	113,171,813	162,932,730	295,857†	59,010
1936	714	274,949,811	27,458,821	334,049*	13,907,828	116,608,661	171,644,865	309,936†	61,593

Year.	Materials Used in Making Gas. Coal Carbonized.	Materials Used in Making Gas. Coke for Water and Producer Gas.	Materials Used in Making Gas. Oil for Carburetting.	Quantity of Residuals Made. Coke and Breeze.	Quantity of Residuals Made. Tar.	Quantity of Residuals Made. Sulphate of Ammonia.	Number of Consumers. Prepayment.	Number of Consumers. Ordinary.	Number of Consumers. Total.
	1,000 Tons.	1,000 Tons.	1,000 Gallons.	1,000 Tons.	1,000 Gallons.	Tons.			
1931	17,427	804	53,124	11,732	212,682	103,001	5,560,619	3,997,610	9,558,229
1932	17,001	746	51,749	11,416	211,010	75,728	5,783,449	3,989,566	9,773,015
1933	16,714	749	54,139	11,090	209,983	65,827	6,017,383	3,994,996	10,012,379
1934	17,137	620	40,296	11,396	215,966	71,140	6,312,760	3,964,250	10,277,010
1935	17,294	640	41,679	11,541	219,774	76,701	6,559,123	3,957,636	10,516,759
1936	18,334	545	32,507	12,286	233,656	86,345	6,802,523	3,972,921	10,775,444

* Including "Other Gas" and "Coke Oven Gas." † Including "Gas supplied separately for industrial purposes only."

‡ H.M. Stationery Office, Adastral House, Kingsway, W.C., or any bookseller. Price 4s. 6d. net, postage extra.

Coke Oven Gas Purchased

The following quantities of gas were bought from owners of coke ovens by authorized gas undertakings in 1936, and appear in the Board of Trade Return as sold to consumers by those undertakings:

Purchasing Undertaking.	Quantity of Gas Involved.
ENGLAND AND WALES.	1,000 Cu.Ft.
Accrington District Gas and Water Board	618,318
Ackworth, Featherstone, Purston, and Sharlston Gas Company	46,043
Burnley Corporation	544,569
Castleford and Whitwood Gaslight and Coke Company	178,761
Chesterfield Corporation	343,368
Clay Cross Gas Company, Ltd.	101,072
Derby Gas Light and Coke Company	1,442,163
Eckington and Mosborough Gas Company, Ltd.	36,500
Garw and Ogmore Gas Company	24,365
Gas Light and Coke Company	825,068
Haslingden Union Gas Company	53,088
Houghton-le-Spring District Gas Company	89,246
Kettering Gas Company	231,192
Kidsgrove Gaslight Company	53,906
Mansfield Corporation	307,877
Middlesbrough Corporation	1,299,864
Mirfield Gas Company	43,906
Newcastle-upon-Tyne and Gateshead Gas Company	3,050,723
Nottingham Corporation	735,836
Ossett Corporation	152,704
Pontypool Gas and Water Company	217,130
Pontypridd U.D.C.	160,069
Rawmarsh U.D.C.	87,913
Redcar Corporation	192,912
Rhymney and Aber Gas Company	259,806
Rotherham Corporation	1,071,347
Rothwell Gas Light Company	67,569
Royston and Brodsworth Gas Company	125,629
Sheffield Gas Company	8,361,460
Shirebrook and District Gas Company	78,313
South Yorkshire and Derbyshire Gas Company	282,981
Stocksbridge Gas Company	65,141
Stoke-on-Trent Corporation	920,324
Sunderland Gas Company	578,571
Swinton and Mexborough Gas Board	736,222
Tudhoe and Sunderland Bridge Gas Company	11,772
Wath, Bolton, and Thurnscoe Gas Board	114,415
Wombwell U.D.C.	119,627
Worsbroughdale and Worsbrough Gas Light and Coke Company, Ltd.	28,340
SCOTLAND.	
Glasgow Corporation	671,106
Total	24,329,216

The following is a comparative table of the quantities of gas bought from owners of coke ovens by authorized gas undertakings in Great Britain during the years 1932 to 1936:

Year.	Number of Purchasing Undertakings.	Quantity of Coke Oven Gas Bought.
		1,000 Cu.Ft.
1932	32	15,441,487
1933	31	16,326,786
1934	33	18,194,054
1935	40	20,454,577
1936	40	24,329,216

Objections to Mercury Lighting

Warrington Shopkeepers' Opposition

A proposal to install mercury vapour lights in the centre of Warrington, including the "new" Horsemarket Street, has met with stern opposition, and a recommendation of the Street Improvement Committee was eventually referred back for further consideration.

Moving the reference back, Councillor J. Canon Bardsley said he had obtained the opinions of shopkeepers in the district affected and it was evident that this type of lighting was not universally in favour. It was felt that it would take away the real colour of articles in shop windows. There was also a difference of opinion among ordinary pedestrians and motorists would feel that they were driving through a "valley of the dead" owing to the ghostly effect of the lighting.

Councillor Frank Bolton pointed out that the mercury vapour system had been tried out on Kingsway North, Kingsway South, and the Causeway. He agreed that it would be likely to have a remarkable effect on the articles in some shop windows. In a tailor's shop, for instance, it would be impossible for a customer to choose the cloth he wanted.

That gas lighting had been reintroduced in many important towns and also in the Boroughs of London, was pointed out by Alderman Stringer, who remarked that if it were installed in Warrington probably everyone would be satisfied.

A plea for uniformity in the lighting of sections of roads leading into the town was made by Councillor W. A. Boulting, who said that, coming along Winwick Road there was a long stretch of gas illumination, and a further contrast with Horsemarket Street and Bridge Street was not desirable. He thought further consideration should be given to the views of the Horsemarket Street shopkeepers.

The Twenty-Sixth National Conference

Held at Manchester

OF THE

British Commercial Gas Association

from Sept. 26-29, 1937

Last year the British Commercial Gas Association celebrated its Silver Jubilee at Bath. This year, for the first Annual Conference of its second quarter century, it returned to the City of Manchester—the scene of the first gathering in the year 1912. Virile as the Association itself, its first President, Mr. R. G. Shadbolt, was present on the platform to support Councillor W. P. JACKSON, J.P., Chairman of the Manchester Corporation Gas Committee, who conducted this year's proceedings with the ability which appears to be a particular gift of successive Presidents of the B.C.G.A.

EACH year seems to bring increased attendances at the B.C.G.A. Conferences, which confirms the impression that they are among the most popular events of the gas year. This popularity is, of course, due in the main to successful organization, which ensures that the maximum benefit is derivable from attendance at this, the most cosmopolitan of all the Gas Industry's gatherings. All sides of the Industry meet, and the judicious blend of the more serious with the purely social phases ensures opportunities for the exchange of news and views both in public and in private which do not occur to the same extent on any other occasion.

In its choice of venue, too, the Association has been singularly fortunate for a number of years and, even though we all knew that much of the fun poked at Manchester is traditional rather than based upon any foundation of fact, it would have been difficult to anticipate such enjoyment of the Conference days as was experienced by everybody. Even the antique weather joke was not available to dinner speakers on this occasion, because—to the surprise be it confessed even of the natives—the sun shone day by day from an almost cloudless sky.

A Wonderful Welcome.

NEVER were thanks more genuinely expressed than to the Corporation of Manchester for the enormous part they played, as backers of their Gas Department, in making the Conference one of the most pleasant and successful of the long series. Council Chamber, Lord Mayor's Parlour, Banqueting Hall, all seemed to be at disposal for whatever purpose required, even to the use of the extensive entrance hall for an exhibition of display material.

Seemingly inexhaustible in his determination to see that nothing was lacking in Manchester's hospitality, the outstanding success of the Conference was Manchester's inimitable Lord Mayor, if we may be pardoned for referring in such terms to her first citizen. Alderman J. Toole's reception as a speaker on several occasions can have left him no doubt of the pleasure which his speaking gave, and he spared himself not at all in this direction. Unfortunately no report can possibly do justice to him, but those who heard him will long carry with them a recollection of extraordinary sincerity, fairness, and tolerance blended with a sense of humour which any man in the world might envy.

Preliminaries to Business.

A NUMBER of the delegates and their ladies were able to arrive in Manchester on the Sunday, and the first assembly, a crowded one, was for a display of the new gas films for the 1937-8 season at the Midland Hotel.

On Monday morning alternative all-day excursions were arranged to the Lake District or to Blackpool, which were most enjoyable on one of the hottest September days which Manchester has enjoyed for many years.

In the evening delegates and their ladies flocked in large numbers to a Reception by the Lord Mayor, which, with the dance that followed, was enjoyed to the full in the spaciousness of the Town Hall, beautifully decorated for the occasion.

A Civic Welcome.

AND so to the more serious business of the Conference which began on the Tuesday morning, though most of it will need only brief reference in these notes, since it is dealt with fully in other pages. As we have already remarked, admirable accommodation was placed at the disposal of the Association in the Town Hall, where even the remarkable number of delegates who attended the sessions right to the last were able to do so in complete comfort. This, incidentally, was yet another manifestation of the manner in which the Corporation set themselves out to ensure the success of the Conference.

The Lord Mayor opened the proceedings by extending a cordial welcome to the delegates, mentioning the personal interest which he had in the Conference, inasmuch as for some 16 years he himself had been a delegate. They were meeting, he said, in the centre of the greatest industrial

part of the whole world. Even Pittsburgh, in engineering, was not so great as the Manchester area, and he loved Manchester because she had sent her sons and daughters all over the civilized world teaching other people how to do things. Manchester had taught the world how to produce cotton goods, and it had taught the world engineering. Greatest of all, however, Manchester had taught the world the love of liberty, freedom of thought, freedom of speech, the right to express individual opinions, and the right to vote whichever way one desired. He charged them to do the best they could for their business, and when they had done that to do the best they could for the greatest country in the civilized world.

The Late J. H. Sillitoe.

HAVING thanked the Lord Mayor for his welcome, the President said: "Before we open the proceedings of our Annual General Meeting, I am sure you would wish me to refer to the great loss Manchester has sustained in the death of the chief official of our Gas Department, J. H. Sillitoe, which occurred about a week ago. From the time it was suggested that this Conference should be held in Manchester Mr. Sillitoe had looked forward to it with very great pleasure, because he had been attending the meetings of the B.C.G.A. for very many years, and during his last illness his thoughts were continually on what would happen at this Conference. I feel sure that you would wish to join in an expression of sympathy with his relatives in the great loss they have sustained."

The Conference stood in silence for a few moments. This, we would mention, was only one of very many tributes which were paid in the course of the proceedings, both business and social, to the memory of J. H. Sillitoe.

Absent Friends.

THE President next referred to messages of regret which had been received from old friends who were unable to be present. Among others was one from Sir Francis Goodenough, whose health was unfortunately not yet good enough to allow him to make the journey. Mr. Arthur Paddon had also been unable to attend, and Past-Presidents who were greatly missed were Mr. William Cash and Councillor Walter Muter.

Then, following the appointment of Messrs. R. W. Cowie, of Hawick, and F. H. Robinson, of Bishop's Stortford, as scrutineers for the ballot for the new President, Mr. A. W. Smith, Chairman of the Executive Committee, formally proposed the adoption of the Report. It was agreed that this should be taken as read in view of the fact that it had been previously circulated to members. Mr. Smith, however, took the opportunity of expressing his personal gratification at seeing the first President of the Association, Mr. Shadbolt, on the platform that day. There had, he gathered, been some little differences of opinion as to who really was the first President. To put the matter right he made it clear that the first Annual Conference of the Association had been held in Manchester under the Presidency of Sir Corbet Woodall, but, as they knew, the Association was the child of The Institution of Gas Engineers, and the President of the Institution at that time, Mr. Shadbolt, was really the first President of the Association. Like children of ordinary parents, he was afraid that the child of the Institution had perhaps been a little troublesome to its parents. Members of the Institution might have felt that the Association in its youthful vigour was carrying them along a path they were rather reluctant to travel. But he thought this was all to the good, and in the past year they had been endeavouring to put the Association on to a broader basis than had been the case in the past. In saying this he did not in any way wish to deprecate the wonderful work done by Sir Francis Goodenough.

The Year's Work.

DURING the past year the Executive Committee had tried to broaden the basis and place responsibility on to more shoulders. They had formed sub-committees to deal with the various activities of the Association, and he thought they had met with great success because they had brought into the common pool the experience of expert salesmen on the various points they had to discuss. They had benefited greatly from a close association betwen the Publicity Department and the Publicity Officers of the Gas Light and Coke Company and other undertakings, and they had endeavoured to place responsibility a little more than had been the case in the past on the Deputy Chairman. He would like particularly to thank Mr. W. J. Sandeman and Mr. J. Sandon Stubbs for the full share they had borne in the work.

As regards the Staff, Mr. Rowe and Mr. Lucas had had a very hard task because they had lost during the past year their old friend Walker, whose experience, since the formation of the Association, in organizing conferences and in handling tactfully the many members of the Association, had been so invaluable.

He would not like this occasion to pass without voicing to the Gas Light and Coke Company, and particularly in a very personal way to Sir David Milne-Watson, their thanks for making it possible for the various national associations to carry on their activities in the magnificent new premises at Gas Industry House. With great pleasure, also, he mentioned the fact that the South Metropolitan and the South Suburban Companies were now standing shoulder to shoulder with them in all the work they were endeavouring to do on behalf of the Gas Industry.

With regard to national work, they had reached the position where the educative propaganda of the past could be continued with campaigns which dealt more intimately with the consumer. In this connection, advertising had been concentrated on special selling weeks, and they were now making a nation-wide price offer to the public. Such campaigns as these were bringing them nearer to a unified national marketing policy. It was one which he was confident would commend itself to them all, and it would be the intention of the Executive Committee carefully to consider its useful development. The traditional educative advertising, which aimed at building up a body of public opinion favourable to gas, would be sustained in conjunction with these direct selling campaigns.

The Association's work could not be complete without a service enabling members to tie-up with the Association's national campaigns in their own local areas. In this connection, the use made by members of the Association's services had increased by a remarkable extent over the past twelve months. The growing importance of display was indicated by the increased use of the Association's Studio. More and more orders had been received for publicity material, and the Publicity Department had been hard put to it at times to meet the ever-growing requirements of members. The propaganda films had met with a great reception from the public and been eagerly sought after.

A. W. SMITH,

General Manager and Secretary of the Birmingham Corporation Gas Department and Executive Chairman of the B.C.G.A.

In conclusion, Mr. Smith said he would like to pay tribute to Mr. R. J. Sykes, whom they were all glad to have with them again that day. Mr. Sykes was the founder and head of their advertising agency—the London Press Exchange. He attended the very first meeting at Manchester, and had taken the greatest interest in their affairs ever since. In the last few months he had decided to shed some of his responsibilities. Mr. Sykes had been more than an agent to the Association; he had been a friend, and on many occasions when they had needed a friend at court with the Press, Mr. Sykes had proved a friend indeed.

A Growing Membership.

THE adoption of the Accounts was then moved by the Hon. Treasurer, Mr. W. J. Sandeman, who considered it unnecessary to go into much detail. He did, however, mention the fact that their membership continued to grow and they now included 811 undertakings, representing 93% on the basis of make. Of this num-

ber 90% were contributing on the full basis. He would like to reinforce the welcome which the Executive Chairman had already offered to the South Metropolitan and South Suburban Companies, and endorse his remarks as to the great addition of strength which this would mean to the National work. He would only add that, as their Hon. Treasurer, he was satisfied that every penny of the income was being spent in the best possible manner.

Following the adoption of the Report and Accounts, Councillor Jackson gave his Presidential Address. This is reproduced in full on other pages of the present issue. Likewise we need make no extensive reference here to the Address by Sir David Milne-Watson on National Fuel Policy, in which he took the present opportunity—perhaps the last before next Session's promised legislation on electricity and coal—to put forward certain very definite views which are held by the Gas Industry.

Eileen Murphy on America.

THE next item was the presentation by Mrs. Eileen Murphy of her report upon her recent visit to America. In introducing her Paper, Mrs. Murphy explained that one of the chief things she noticed in America was the careful way the Americans have of measuring the market for gas. They carry out extended investigations in order to find out how much gas it is possible to sell and the best way to sell it. They never over-estimate the market and never sell on guesswork. They told her that they do not believe in intuition, and they take nothing on trust. They go to a lot of trouble to find out the position, especially with regard to women customers.

The second part of the Report, explained Mrs. Murphy, deals with home service. The American managers think that unless a woman can sell she is out of place in a gas company. The women will tell you that they make pin money by commission on sales, and that unless they were allowed to sell they would lose their commercial value in the labour market.

The Americans are also people who believe very strongly in dramatic demonstration. One gas company wanted to show that the gas oven was well insulated, so they got a man to sit on the top of the range while the dinner was being cooked. That same man with a battered old tin saucepan cooked all sorts of things. He really did cook them quite well, and it was not just a comic stunt, because he was proving to the women that gas cookers do not need expensive pots and pans like electric cookers.

The third and fourth parts of the Report deal with advertising and sales, and one point which is a very big feature of American sales methods—the sales contact. Last year they pushed up the sale of water heaters by 55%, which shows that the idea is worth studying, especially now that we are going to develop our water heater sales. Mrs. Murphy assured her audience that the average woman washes an acre of dirty dishes and three miles of clothes every year. She scrubs five miles of floor and washes a mile of glass every year, and the average woman in the house needs hot water about sixty times a day. In spite of this, there are two to three million homes in England that have no provision for hot water whatever.

The New President.

AT this point, the scrutineers having completed their arduous duties, the President was able to announce that Mr. A. M. Paddon had been unanimously elected President for the ensuing year and that Messrs. Cash, Stone, & Co. had been re-elected Auditors.

The announcement was followed by the reading, by Mr. Frank H. Jones, of a letter which Councillor Jackson had that day received from Mr. Paddon, in which he expressed his great regret at being unable to attend the Conference owing to a temporary bout of ill-health. He was, however, satisfied that his old friend and colleague, Mr. Frank Jones, would represent him very capably at their gathering. He sent his good wishes for the success of the Conference, and hoped to be able to welcome the members of the Association at their Meeting this time next year " at Brighton-on-Sea, which in September or October will be found, if the weather is kind, to be a passable imitation of the Riviera."

Mr. Paddon's invitation was naturally cordially accepted and the President announced that a message would be sent to him conveying to him their thanks.

New Manchester Showrooms.

AT the conclusion of the morning Session the delegates repaired to the Town Hall extension near by to inspect the new showrooms of the City of Manchester Gas Department.

It is interesting to note that " in appreciation of the honour conferred by the decision of the Association to hold their 26th Annual Conference in the City," the Gas Committee had considered it appropriate that, if possible, the completion of the new showrooms should coincide with the date of the Conference. This objective had involved a considerable revision of the original building programme, and Councillor W. P. Jackson, in a foreword to the official brochure which was distributed to the delegates, expressed his thanks to the Town Hall Extension Committee, the Architect, Mr. E. Vincent Harris, and the various contractors, for speeding up the work sufficiently to enable visitors to visualize one of Manchester's contributions to the efforts of the Gas Industry in the promotion of gas sales.

Those who had the privilege of viewing the showrooms were loud in their praise of the wonderful effort which had been made to complete them in time and thus give the opportunity of seeing the very last word in showroom construction and display. An illustrated description of the premises will be found elsewhere in this issue, and we need not therefore at this point refer in any detail to them. We would, however, record the very great satisfaction which is felt by a large number of gas undertakings for many miles round Manchester at the action which the Gas Committee has been able to take in erecting this " show-place " for gas. While it will undoubtedly prove of immense service to the citizens of Manchester itself, its influence will be felt far beyond the City confines.

Official Luncheon.

FOLLOWING the inspection of the showrooms, the Official Luncheon for delegates and ladies was held at the Midland Hotel, Councillor Jackson presiding. The proceedings were entirely informal, and there were no toasts, but the health of the Lord Mayor was drunk. Replying in a few remarks, he spoke of the visit to be paid in the afternoon to Wythenshawe, which, he said, was a tribute to a few Manchester men. At Wythenshawe they were now accommodating people from some of the worst slums and giving them the opportunity of living in some of the most beautiful surroundings in the world. So satisfied were the people with the change that when their children misbehaved themselves, instead of telling them, as used to be done, that the parents would send for a policeman, the children were told that if they did not behave themselves they would be sent back to the slums of Manchester! It was the duty of everybody, he continued, to work to make this country a better one than it was at the present time and to build better homes for everybody. In this the Gas Industry could play a great part because these new homes would want gas fires, gas cookers, and all the things which the modern scientist and industrialist could give them. Therefore, he hoped that every delegate to the Conference would pay a visit to Wythenshawe to see what the Manchester Corporation and the Manchester Gas Department were doing with this object in view.

Wythenshawe.

THE visit to Wythenshawe proved indeed to be of outstanding interest to a very large party who repaired there in motor 'buses, and saw for themselves this country home of some 40,000 ex-slum dwellers which had been so well described at last year's Conference by Councillor Jackson.

After a tour of the estate, which is of special moment to the Gas Industry in connection with smoke abatement problems, the visitors were assembled for tea in a marquee of giant proportions, where they were addressed by Prof. Winifred Cullis. Her remarks centred around an ardent plea for the teaching of physiology and biology in schools, particularly in connection with the health campaign which is interesting the nation at the present time. Prof. Cullis made contact with the Gas Industry in emphasizing the importance of nutrition as a prime contributor to health, and stressed the point that the two classes who do not get good food are those who lack knowledge and those who lack means.

Value of Film Propaganda.

PROF. CULLIS was followed by Mr. John Grierson, who touched upon the contacts between the Gas Industry and the problem of living in its broadest sense. Those who appreciated the educational side of the Gas Industry knew that they had not been unmindful of some of the matters to which Prof. Cullis had referred and in particular the nutrition problem. It was not, he said, the

Ministry of Health which had improved the health of the nation last year, but the Gas Industry, and these facts were symptomatic of an advance of an imaginative educational policy in the Gas Industry which gave it a very proud place indeed in the educational system of the country.

Those attending the Conference had, said Mr. Grierson, been given the opportunity of seeing the latest films, and these in several ways carried the question of how to live one step further, and put into the hands of every gas organization in the country a medium by which they could carry this work, in a national way, into the local community. In his view, which was confirmed by opinions of others who had studied the film propaganda question, nothing would keep the flag of gas flying more effectively than films, because they maintained public relations in a manner which no other method could do. The present films were better even than the previous ones, and there was not the slightest doubt that later films would be even better still. The Propaganda Department of the Industry was doing all it could in providing material, and it was up to the individual undertakings to make the best use locally of this propaganda.

The New Films.

WEDNESDAY morning was full of business, being devoted to an Address by Mr. S. C. Leslie on Kensal House, and one by Colonel W. M. Carr, O.B.E., T.D., on Planned Selling. These, together with the animated discussions which followed them, are fully reported on later pages. As an indication of the interest to which they gave rise we may mention that a full house put in nearly an hour's overtime upon them. The end of the Session had been scheduled for 11.45, when the new films were to be displayed in the Lord Mayor's Parlour, but the house continued in discussion upon Colonel Carr's Address until 12.45, when a hasty move had to be made towards luncheon in order to be in time for the afternoon programme.

However, there had been other opportunities for most of the delegates to view the films, and approval of them seemed to be general. It would not be appropriate for us to discuss them in detail following what was purely a private exhibition and in advance of their London "Première," and we will therefore merely record on the present occasion that they are six in number, running in all for 81 minutes, and varying from a 10-minute comic to 28 minutes of educational matter entitled "Children at School."

Lunch to the Retiring President.

FOLLOWING this important business Session, the retiring President and the members of the City of Manchester Gas Committee were entertained at luncheon, at the Midland Hotel, by the President-elect, Vice-Presidents, and members of the Association. In the regretted absence of Mr. A. M. Paddon, the chair was taken by Mr. Frank H. Jones.

The Chairman, proposing the Toast of "The Retiring President and the Manchester Gas Committee," took the opportunity of thanking the Corporation, and particularly the Lord Mayor, for the wonderful reception which had throughout been accorded to the Association. He included also the whole of the staff of the Gas Undertaking, who had had a great deal of work in preparation for the Conference, and his mention of the names of Mr. A. L. Holton and Mr. Cadman was received with acclamation.

Referring to Councillor Jackson, the Chairman said he doubted if any Past-President had done more work and given more attention to the affairs of the Association. He had attended meetings all over the country, notwithstanding that he was in charge of the great Gas Undertaking of Manchester and also had his own business to attend to. Councillor Jackson would leave behind him a name and a reputation which would stand very high in the list of Past-Presidents.

Councillor W. P. Jackson, in a brief response, said he would also have liked included in the Toast the Lord Mayor himself, because although, during his year of office as Mayor, he was not attending the meetings of the Gas Committee, he was nevertheless a member of that Committee. After expressing his appreciation of the manner in which the Toast had been proposed and received, he said he hoped that all those attending the Conference would go away with pleasant recollections of Manchester and of the work the Corporation was doing not only in regard to gas, but in other directions for the benefit of the community. He regarded it as a privilege to have been able to serve the Association as President, and expressed the hope that although he was now no longer President he might yet be of some use to the Association in the future.

The only other Toast was that of "The Press," which was proposed by Mr. A. W. Smith and responded to by Mr. R. T. Lewis (Managing Editor and Director of the *Northern Daily Mail*).

The Ship Canal.

THE final act of the Conference was a trip on the Ship Canal by courtesy of the Chairman and Directors of the Manchester Ship Canal Company, which was enjoyed by a large party, interest for the Gas Industry being enhanced, of course, by the fact that Sir Frederick West is Chairman of the Company.

A detailed description of this marvel of engineering would be outside our scope, but a few facts and figures may be recorded as an indication of the magnitude of the undertaking. The canal is 35½ miles long; its entrance is at Eastham, on the south side of the Mersey, six miles above Liverpool. The whole of its length, which includes as well as the main docks at Manchester the lesser dock systems at Ellesmere Port, Stanlow, and Runcorn, constitutes the Port of Manchester. The lower 24 miles of the waterway were cut, or formed by embankments. The next four miles were made by canalizing the Mersey up to its junction with the Irwell, which, deepened and widened, completes the route to Manchester Docks. Four locking systems, ignoring Eastham Locks which are tidal, raise

A. L. HOLTON,
Chief Engineer of the Manchester Corporation Gas Department.

the canal 58 ft. 6 in. in its length. The water level at Manchester Docks is some 70 ft. above mean sea-level. The largest lock at Eastham is 600 ft. by 80 ft.; at the remaining systems 600 ft. by 65 ft. The excavated depth is 30 ft. up to Stanlow, from Stanlow to Manchester 28 ft. The general bottom width at the excavated depth is 120 ft. The Rivers Irwell, Bollin, and Weaver, besides smaller streams, constitute the water supply, but at each lock system there is an emergency pumping installation to maintain the upper level. The Bridgewater Canal crosses the Ship Canal at Barton on a swing aqueduct, and the River Gowy, at Stanlow, is siphoned beneath it.

The waterway is regularly navigated by ships of 15,000 tons d.w., and the Port has shipping connections with the principal world ports. The annual traffic approaches 7 million tons, valued at over £50 millions. The docks at Manchester, with a water space of 120 acres, are laid out and equipped on modern lines. Fireproof quay sheds line the docks, and on the dock estate there are cool chambers for the sorting of perishables and warehouses for the storage of cotton and other commodities. In the vicinity of the docks there are over 3 million cu.ft. of cold storage. Two dockside grain elevators at Manchester have each a capacity of 40,000 tons; another at Ellesmere Port accommodates 20,000 tons. Special equipment exists for the handling of all classes of cargo in bulk and detail. Electric quayside cranes are operated from the ship-deck by a distant-control device. Coal and oil bunkering facilities exist at several points along the Canal. Manchester Dry Docks comprise three graving docks, and there are pontoon docks at Mode Wheel and at Ellesmere Port.

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THE B.C.G.A. CONFERENCE

THE PRESIDENT.

Presidential Address

OF

Councillor W. P. JACKSON

(Chairman of the City of Manchester Gas Committee)

Councillor Jackson was born in 1880 and was educated locally, completing his technical education at Manchester University lectures. He started work at thirteen years of age, and after some years in the retail trade, set up on his own account at the age of 24 as a manufacturer of overalls. He is now Governing Director of the amalgamated firms of W. P. Jackson, Ltd., and H. T. Hughes & Co., Ltd., owners of the Falcon Mills in Manchester and the Bury Street Mills in Stockport. He is also Director of Rhayador Quarries, Ltd. Councillor Jackson has served on the City Council since 1923. He was appointed Chairman of the Wythenshawe Estate Sub-Committee in 1933 and Chairman of the Gas Committee in 1935; he is also a member of the Education and Finance Committees.

The first annual meeting of the British Commercial Gas Association was held in Manchester in October, 1912, and it is with great pleasure that I welcome you back to our City after an absence of twenty-five years.

As one who has served the citizens of Manchester for a considerable number of years, I am proud to recall that this City is the birthplace of many great movements—both political and industrial—and it is an added pleasure for me to remember that it took an active part in the formation, not only of the British Commercial Gas Association, but also of The Institution of Gas Engineers and the Junior Gas Association. These Associations continue to grow from strength to strength, each in its respective sphere, and they have not only substantially contributed to the continued prosperity of the Gas Industry, but have enabled it to confer inestimable benefits both on the community in general and industry in particular.

Twenty-six years ago, the Association was formed, *inter alia*, for the purpose of consolidating the Gas Industry, and presenting a united front in regard to publicity, sales organization, and service development. It is obvious that those who were responsible for the formation of the Association were far-seeing men, but I venture to say that even they must be astounded at the phenomenal progress that has been made in these objects, the necessity for which, at that time, was a debatable topic.

The first President of the Association—Mr. Corbet Woodall (later Sir Corbet Woodall)—in his Address appealing for support of the new Association, said: "We are heralds of a new birth in gas polity." Sir Corbet Woodall died in 1916, but if he had been here to-day, he would have been amazed at the success of the Association, and all that has been accomplished during its existence.

The necessity to-day for publicity, good selling organization, and adequate service to the consumer, will be admitted by all to be of vital importance, not only to the Industry as a whole, but also to the community.

Never was there greater need for bringing to the notice of the public and industry the undoubted merits of gas. Consequently, the necessity for the British Commercial Gas Association to continue to function as an essential link in our national organization is of paramount importance. Its work will never be completed, for gas is being constantly adapted to new conditions and modern demands.

In the early days, gas was used solely for lighting, but to-day it not only provides the most restful illumination known, but it has also entered and captured new fields of activity, notably cooking and the providing of heat and power for an ever-growing number of industrial processes. "A Thousand and One Uses for Gas" is a very happy slogan of the British Commercial Gas Association and, moreover, it is a truism.

Responsibilities of the Gas Industry.

While it is the fundamental duty of every Undertaking to provide the public with a constant supply of gas of consistent quality at the lowest possible prices, it is also imperative that the up-to-date services which the Gas Industry offers to-day should be continually brought to the attention of potential consumers.

The success of Gas Undertakings should not be measured by the amount of profit made, but by the service rendered to the community, for increased sales are far more important than increased profits. Real service gives satisfaction, and satisfaction automatically procures increased sales, but the service given must be in the best interests of the consumer.

Service does not mean merely persuasive salesmanship. It must consist of such expert advice and assistance that it will enable consumers to obtain the maximum value from the gas for the particular purpose for which it is employed and this means that industrial processes must be carefully studied. Gas is indispensable to industry, and this strong position must be maintained by further research and investigation. The ultimate result will be reciprocal for the consumption of gas will increase and trade be materially assisted by a reduction in production costs due to improved methods of heating.

The Gas Industry has a great heritage. It has served the community through times of peace and war, for over 130 years, and its record of service is second to none. The economic position of this country is such that it is essential that the Gas Industry should continue to prosper.

Competition, and a state-aided competitor, have been a stimulant and not a deterrent, and the Gas Industry not only lives, but grows year by year, despite the tendency for the ultra modern to favour our competitor. In other words, the ravages of competitors are being made good by taking advantages of opportunities and new developments with the result that there is an ever-increasing number of gas consumers and a steadily increasing output.

It is particularly interesting to note that when the first meeting of the British Commercial Gas Association was formed, the sales of gas were 205 thousand million cu.ft., and last year they were 332 thousand million cu.ft., an increase of no less than 62%.

Advertising.

A 62% increase in the sales of gas since the establishment of the Association is a striking achievement. A great part of the success has, of course, been due to research and the improved methods resulting therefrom; but it would be most unjust to assume that, with all these, such results could have been attained unless the Association had started the first national co-operative advertising campaign in the country, and maintained this consistently over a period of 26 years. Expenditure in advertising, both national and provincial, has increased steadily. In addition to the national advertising of the B.C.G.A. a greater number of undertakings each year are advertising locally. A rough estimate of sales of gas each year put the total at round

about £70 millions. The sale of appliances is additional to this. But it is probable that, even now, not more than half of 1% of this amount is spent in advertising—a very moderate allocation—but with this moderate expenditure in the Press, results have been achieved which can be described by no other word than spectacular. There are other industries in the country which might well profit by the experience of the Gas Industry over a period of a quarter of a century—a period during which a fierce and increasing competition has had to be faced.

Utility, Service, Efficiency, and Economy are the *raison-d'être* for this remarkable position and give positive evidence of the vitality of the Gas Industry.

You are assembled in a County which has been particularly affected by trade depression and also by a complete change of conditions in its staple industry—Cotton—and yet even Lancashire has participated in an increase in gas consumption.

The Gas Industry must not assume an inferiority complex for its prospects were never brighter. It is important, however, to bear in mind that the Gas Industry no longer enjoys a monopoly. What it does enjoy is the battle of competition, coupled with the knowledge and full assurance that its commodity is bound to succeed by virtue of its superiority, provided those commercial methods and practices are adopted which all successful concerns have shown to be an absolute necessity.

The Gas Industry is one of the largest employers of Capital in the country, employing over 200 million pounds. It is the seventh largest direct employer of labour, and is also the third largest ratepayer. We should always bear in mind that we are leaders of no mean industry and, in every way, uphold the best traditions of service to the community we have the honour to serve.

Smoke Abatement.

It is noteworthy that one of the first acts of the British Commercial Gas Association was to support the Smoke Abatement Movement, and the Gas Industry has played a great part in mitigating the smoke nuisance, but it must play an even greater part in the future. It is estimated, on good authority, that in Manchester alone damage is taking place at the appalling rate of one million pounds per annum. This figure ignores the ill-effects to the health of the citizens, on which no monetary value can be placed. The apathy to this movement can only be ascribed to the complacency of the English character, but public opinion is slowly, but surely, being aroused to this outrage on civilization. The smokeless city need no longer be the dream of the idealist. It is an ideal that can be accomplished by the use of gas, and I venture to say that no industry has done more to abolish smoke than the Gas Industry. The use of gas in Manchester saves the City from an added sootfall of 20,000 tons a year. Surely there is no greater tragedy than to see new and costly buildings in our cities irrevocably spoilt by soot within a few years, or to see model houses being built in charming surroundings only to be spoilt, in due course, by the gloom of a smoke pall caused by the use of coal in the houses. It is obvious that the amenities of the suburbs can be preserved only if smoke is abolished.

At the last Annual Meeting I had the pleasure of addressing you on the subject of "The Uses of Gas in a Satellite Town," and at Wythenshawe, while every endeavour is made to attract new industries, care is taken to ensure that such industries will not create smoke nuisance.

Municipalities should give a definite lead to smoke abatement and by example and precept make valuable contributions to a cleaner atmosphere.

It should be reiterated, with even greater emphasis, that the Gas Industry produces two ideal smokeless fuels, viz., gas and coke, and these two fuels should make the smoke nuisance a thing of the past. We can take pardonable pride in distributing from our Gas-Works 85% of the heat energy of the coal in smokeless form, for no other industry comes within measurable distance of that accomplishment. The smoke abatement problem can be solved by the Gas Industry, and it is our duty to abolish sunless days in our cities by educating the public in the solution of this menace of life and property.

Modern Uses for Gas.

There is a persistent and consistent demand, in every walk of life, for more congenial and less laborious conditions, and gas can supply that demand both in industry and in the home. The luxury of to-day is the necessity of the morrow, and all will appreciate the valuable work that has been done, with increasing success, by the British Commercial Gas Association in maintaining the premier place for gas, despite the publicity efforts of its competitors. The amazing progress that has been made by the British Commercial Gas Association since its inception is little short of a romance, and is embodied in that apt saying "Gas is as Modern as the Hour."

Very little purpose would be served by making a detailed comparison of the vast improvements that have taken place, but it is no exaggeration to say that domestic gas appliances comply with all the demands of the most up-to-date housewife. Not only have design and appearance undergone changes, but the efficiency of appliances has been considerably increased, resulting in reductions in gas consumption of as much as 20% for a given duty. Such achievements are the result of extensive and intensive study and research, which should stimulate further advancement.

There are cookers in all colours and sizes, fitted with thermostatic control, which enables food to be cooked without supervision; automatic water heaters which give a constant supply of really hot water with a minimum cost, while neat gas fires are available in designs and colours to suit any colour scheme, but not the least of these latest appliances is the necessity for the modern home—the refrigerator—and gas has once again proved itself superior to the task and we now have the paradox of the "Flame that Freezes."

Proper provision for safeguarding food in the home, particularly in the homes of the lower-paid classes of the community, has an important bearing on the question of nutrition which is exercising the Nation at the present time. It is interesting to learn that in a number of L.C.C. flats gas refrigerators are being installed at a rental of 1s. per week. This sum includes fixing, maintenance, and the cost of the gas consumed. This experiment, which I understand has made a very successful beginning, is of the highest significance in that it is in the workers' homes that refrigeration and food safety measures are most needed. Gas is proving that it provides an economical and efficient method of food preservation and the Gas Industry's slogan should be "a refrigerator in every home."

In the industrial field gas has made even more spectacular progress than in the domestic sphere. The generation of heat is essentially one for the Gas Industry. It is clean, the exact degree of heat required can easily be obtained and maintained, and better labour conditions exist when gaseous fuel is used.

In an area adjoining Manchester the industrial load has increased during the past decade by over 50%, and recently one of the largest food producers in the world has decided to build a factory in that area which will become one of the largest users of gas in the district.

How Lancashire's industries are turning more and more to gas to provide them with an accurate and easily controlled fuel is shown by the annual statistics published by the Gas Industry. The figures for last year, for example, show that industries in all the big Lancashire industrial centres increased their purchases of gas. At Stretford in 1935 the demands of industrialists accounted for 32% of the gas sold; in 1936 the percentage rose to no less than 43, an increase of 11%. At Manchester, St. Helens, Southport, Lancaster, Heywood, and Warrington over one-fifth of the total gas made is now purchased by various trades and industries, and at all these towns increases in industrial sales were recorded.

Manufacturers are rapidly finding the advantages of utilizing a uniform gaseous fuel which enables them to increase production at a lower cost, but it is supremely important that the Gas Industry should continually place before industrialists the facts in regard to the modern applications of gas, and, having secured the load, to see that every satisfaction is given.

The Shops Act, 1934, contains regulations in regard to arrangements for the health and comfort of shop workers, and in Section 10 stipulates the provision of:

(*a*) Suitable and sufficient ventilation.
(*b*) A reasonable temperature.
(*c*) Sufficient means of lighting.
(*d*) Proper washing facilities.
(*e*) Suitable facilities for taking meals.

Although the foregoing are only common-place requirements, it goes to show that new outlets for gas are constantly occurring, and that saturation point is still a long way off.

Municipal Activities.

As one who has had the honour of serving on the Manchester City Council for some years, it has been a distinct pleasure to me to observe that increasing quantities of gas are being used by municipalities, but there is still greater scope. As an example, how delightful it would be if the air in all our public buildings was conditioned, and, for this purpose, gas is pre-eminently suitable. It would result, I am sure, in our libraries being used even more than

at present. The advantages of using gas for central heating in municipal buildings, hospitals, and institutions is already much appreciated, and so also is a constant supply of hot water at any hour of the day and night. Visitors to Leeds cannot fail to admire the new civic centre which has been developed and on which the civic building stands out most conspicuously. Such a modern building must have everything up-to-date; its central heating system, its domestic supply, and its cooking arrangements, and gas has been chosen for all these purposes. It is not for me to enter into technical details of the scheme, but it is of interest to note that there are three batteries of "Vesta" gas-fired boilers, each having a maximum output of 2,300,000 B.Th.U. with approximately 20,000 sq.ft. of combined radiator and panel heating. There is also an air conditioning and heating plant, capable of dealing with 8-9,000 cu.ft. of air per minute. The extensive cooking arrangements are capable of cooking for 500 people.

In Britain's largest kitchen, which was recently opened in Liverpool, gas is used throughout, and an idea of its size can be gauged by the fact that it is capable of supplying 10,000 meals to school children in one hour. Public baths and wash-houses are also using gas to a far greater extent than formerly. Open-air swimming is rapidly becoming popular both in health resorts and in our towns, and it is recorded that in one case, after the installation of a gas-fired water heater, the attendance at the baths increased by 10%. In other words, the revenues of both the Baths Department and the Gas Department were increased, and the citizens also benefited.

The most up-to-date and largest swimming pool is at Morecambe, and the heating of 1¼ million gallons of sea water has been entrusted to gas. Gas is also used for the laundries, heating water, central heating, and catering.

In Manchester the new Police Headquarters have been equipped with gas for cooking, and, in the case of the Town Hall extension, gas is to be used for cooking and also for the hot water supply.

One of the outstanding jobs which gas has been called upon to perform this year is the whole of the cooking and kitchen water heating at the new Earl's Court exhibition and entertainment centre, the largest building of its kind in the world. These gas-equipped kitchens will employ about 900 persons; at one time they will serve thousands of restaurant meals (up to 30,000 meals a day), at another be switched over to an enormous output of light refreshments. The seven kitchens which serve the chain of restaurant, tea lounges, snack bars, and staff canteens are placed at convenient intervals about the huge building. The problem of providing an ample supply of hot water for washing up and culinary purposes has been met by the installation of 14 gas water heaters, varying from an appliance with a peak output of nearly 1,000 gallons down to a tiny sink water heater. Each kitchen is provided with an appliance suited to its needs, a proof, if proof were wanted, that gas can satisfactorily undertake the biggest as well as the smallest job of this kind.

Street Lighting

The street lighting load is one that the Gas Industry cannot afford to ignore or treat with indifference. It is of great importance, and gas is eminently suitable for street lighting, with its freedom from failure, coupled with its brilliance and natural colour. It is a load which is certain to increase and the Gas Industry must be prepared to stake its claim as, and when, the time is opportune.

As you are all aware a Ministry of Transport Departmental Committee has been investigating the question of street lighting. An interim report was published some time ago and a final report is expected at any moment. This should, for the first time, define adequately standards of lighting for traffic routes, and will endeavour to suggest a means by which uniformity can be obtained. Continual research into street lighting has been going on for many years in the laboratories of the Gas Industry, and whatever may be the final recommendations the Gas Industry is in a position to carry them out. It must not be forgotten, however, that efficient street lighting can only be secured if funds are available to purchase it. It may be that in order to secure uniformity a national pool will have to be formed. There are, as you know, many districts in which poor lighting is installed because local councils cannot find the funds to improve it. That is merely by the way.

To return to gas street lighting, the Industry has achieved great success during the past year or two with its new type gas lamps. Even during the last couple of months or so there have been placed on the market new lamps which have an increased efficiency of 50% at practically the same gas consumption. Further, during that period new low-pressure lamps have been perfected which give nearly as much light as high-pressure lamps, with no greater gas consumption. Long-term contracts for street lighting have become increasingly numerous and, in not one but many cases, gas having been temporarily discarded has again replaced its competitor with a definite contract for anything from seven to fifteen years.

Actually, gas provides over two-thirds of the street lighting in this country, and over 800,000 street gas lamps are functioning to-day.

Gas Charges.

It has not always been the policy of the Gas Industry to supply gas at the lowest possible prices, and many Undertakings have contributed substantial sums to the relief of rates, &c. As a matter of fact, such a policy was not abandoned in Manchester until the year 1920, when no less than 3½ million pounds had been given to relief of rates.

There has been a reversal of this policy, and to-day attractive tariffs or block charges have been adopted which have resulted in increased consumptions of gas. In Manchester a two-part tariff was put into operation in 1935, and it has proved quite satisfactory.

If any of the suggestions that I have ventured to make in this Paper will prove of service to any Undertaking I am sure that the very efficient staff of the B.C.G.A. will be only too pleased to assist in any way they can.

May I also express the hope that before very long the Association will have a 100% membership of Gas Undertakings (a most welcome addition recently being that of the South Metropolitan Gas Company). When this is achieved, the future of the Industry is definitely assured.

Vote of Thanks.

Dr. R. Veitch Clark (Medical Officer of Health to the City of Manchester) in moving a vote of thanks to the President for his Address said: I have been asked to speak about smoke and smoke abatement, but I would just like to dwell on some of the wider aspects of the work with which you are entrusted. I got quite a shock when your President spoke about shop hours, because I have been entrusted with a portion of the administration of the Act in Manchester as it deals with ventilation and other matters affecting health, but it did not strike me—although I realize it now—that this was a matter which would come within Councillor Jackson's Presidential Address. I was greatly interested in his reference to refrigeration as one of the new developments of the Gas Industry, and the use of gas for domestic service not only for fires but for cooking, is of enormous importance. It simplifies cooking and, as the President said, nutrition is one of the things that is seizing the public mind just now—and not before it is necessary.

Apart from that, the value of gas in domestic life is far more than the ordinary convenience of the housewife or cleanliness. It enables good dishes to be prepared. What is the fundamental scientific reason why cooking should be attractive? This has an absolutely definite scientific basis, and it is because of this that the stimuli of the senses due to fragrant odours produces the first secretion of the digestive juice, the appetite juice, before the food enters the body at all, and this aids digestion. Obviously, therefore, the encouragement to the production of good dietaries is by no means a small contribution on the part of the Gas Industry to the general welfare.

The time has gone by when it is necessary to stress the dangers of smoke and fog. Every year of my life I feel I am running a new race with death. Last year, perhaps, death won. This year I hope I will win and by "win" I mean this, that the death rate is either going up or it will be lower than in previour years. In 1935 I won hands down and had a record low death rate in Manchester. In 1936 I was running a clear length ahead until the beginning of November. Until then I was saying: "We are going to have another low record;" but in the second week of November there came the fogs; I fell behind and death won the race because the rate was up again. I only put it in that way in order to bring to your minds that there are certain things at the moment which we cannot do. Public health cannot by itself abate the smoke nuisance. It needs the help of men like yourselves; it needs the help of fuel engineers who know how to do these things. I know what you should attain—I am speaking of "I" as representing a body of men in my own self, medical officers and the medical profession; but I cannot tell you how to use the coal properly. You can—and we need your help. Only by team work, by the efforts of fuel engineers, gas specialists, coke specialists, electricians, and everybody coming together and working towards the end which that section of medicine, which I have the honour to represent, has demonstrated to be necessary, can this be brought about.

There is only one suggestion I am going to make about all this. Some ten years ago there were appointed several Regional Advisory Smoke Abatement Committees at the request of the Ministry of Health and these Regional bodies have been functioning throughout those years. In South-East Lancashire—our own district—we have been doing everything we can to raise the standard of smoke control to help everybody, and sometimes applying a little more than help. But here is the thing which astonishes me; on our Committee we have representatives of the Federation of British Industries, we have the vigorous and very valuable help of the Coal Utilisation Council, which assists in the best methods of utilizing raw coal in industry, but have we ever had a representative of the

British Commercial Gas Association? I have never seen him, yet I am the Hon. Secretary of the local Regional Committee. Why do you not come as an Association to assist in this matter? There are Regional Committees in Birmingham, in Newcastle and in the West Riding of Yorkshire, and I think there is one in Liverpool. I am not sure about the West of England, but look around and ask yourselves why do you not join up with us definitely. You have done an enormous amount—I am not cavilling at that for one moment—and there is no industry that has done anything like the amount you have for smoke abatement; no industry in the country, and no group of persons more than those who are advocating public health are louder in their appreciation of what you have done. But come over and help us in this regional work and assist us to get these Advisory Committees made statutory.

Why should Manchester or Salford or Bury or Bolton suffer from the bad habits of their neighbours? Smoke is not confined to one area and it is no use legislating and applying laws in individual little spots. There should be a general Board, a Statutory Joint Board, for the whole of South-East Lancashire where this smoke is being produced and it does not matter whether it is this City boundary or that. It applies all over. It is like the Rivers Boards. Rivers are polluted and they take their pollution for many miles along the country side. That was recognized and Rivers Boards were set up. Why in the world when we have to breathe the air—we do not have to breathe the water of our rivers, yet Rivers Boards were set up—should we not control it in a similar manner? Therefore, I seriously suggest to you that during the coming winter you should definitely approach these Regional Committees and say "Let us come over and help you." With that I conclude. You know as well as I do the enormous damage that is done physically, materially, and mentally by smoke. However, it is only one aspect of your activities. I have pleasure in moving that we express our very sincere thanks to our President for a most interesting and illuminating Presidential Address.

A Reminder of Responsibilities.

Mr. R. J. ROGERS (Birmingham): It is a great privilege and pleasure to me to second this vote of thanks to the President for the very interesting Address he has given us this morning. He has reminded us of our responsibilities as an Industry, particularly in the sphere of activity for which this Association was inaugurated in this City 25 years ago. The record of achievement which has been outlined by the President is one of which any industry may be justly proud. He has quite rightly pointed out that the Gas Industry does not enjoy a monopoly. In every branch of our business we are faced with ever-increasing competition.

I am glad the President has referred to the question of street lighting. The statement by him that the street lighting load is one that the Gas Industry cannot afford to ignore or treat with indifference is opportune. Too much apathy exists in many quarters towards this subject of gas for street lighting. The demonstrations of up-to-date street lighting which were given at Folkestone a few weeks ago in connection with the Annual Conference of the Association of Public Lighting Engineers proved beyond any doubt that gas lighting for streets is both economical and efficient and that there are gas lighting units which will satisfy the demands of all classes of highway lighting. The President has informed us that the report of the Ministry of Transport Departmental Committee on Street Lighting is shortly to be issued, and it is anticipated that for the first time standard requirements for traffic lighting will be clearly defined. This is neither the time nor the place to deal with the difficulties which many gas undertakings are faced with in connection with street lighting competition, but I would like to emphasize what the President has said—namely, that the gas lighting load is too important to lose. Whether or not some of the difficulties may be met by the national pool which the President has suggested I do not know, but at any rate, I do feel that it is absolutely necessary that all gas undertakings should devote their energies to conserving gas lighting in their areas by the adoption of suitable up-to-date units for the lighting not only of the main roads but also of the secondary or residential streets. During the past year the B.C.G.A. in conjunction with the Joint Lighting Committee of The Institution of Gas Engineers and the Lighting Section of the Society of British Gas Industries has devoted a considerable amount of attention to this subject of gas for street lighting and the joint results of their collaboration will shortly be available to the members of this Association. Local authorities responsible for the lighting of the highways, and the general public also, require still further enlightenment as to what the Gas Industry can do and is doing in connection with improved lighting of the highways, and I am certain that this Association will do its share worthily in that propaganda work. This Association is, and always will be, I feel, very greatly indebted to the City of Manchester for the part Manchester played in the launching of this Association 25 years ago, and what I think is worthy of our greater thanks and appreciation is the manner in which the Manchester Gas Department has consistently and wholeheartedly supported the efforts of the Association during these last 25 years. Councillor Jackson has won the admiration of all of us in the Industry by the way in which he has presided over the affairs of the Association during the past year and we owe a very great debt to him this morning for the excellent Address he has given us. Therefore, I have very much pleasure in seconding the vote of thanks.

Mr. J. SANDON STUBBS (Liverpool): I have been called upon to support this resolution which I do with peculiar pleasure, because, as Chairman of the Manchester District of the B.C.G.A., I have been brought into contact with Councillor Jackson and I can assure you that his zeal, enthusiasm, and helpfulness have been very much appreciated. The opening of the new gas showrooms in Manchester has put new life in the Gas Industry in this town, and I welcome this development very much because there are so many people who think the Industry is just marking time until the electrical industry is ready to crush it completely. The developments in Manchester, however, must have shown these people that they are quite wrong. The Gas Industry is very live and very virile, and it gives me the greatest possible pleasure to support the vote of thanks to the President.

The vote of thanks was carried with acclamation.

The Dinner

On the Tuesday evening the Manchester Gas Committee gave a Dinner to the Association in the Town Hall, Councillor W. P. Jackson, J.P. (Chairman, City of Manchester Gas Committee), presiding. The principal guest was Sir Edward T. Campbell, J.P., M.P. (Parliamentary Private Secretary to the Ministry of Health).

The Toasts.

After the Toast of "H.M. The King, Duke of Lancaster," had been honoured,

Sir EDWARD T. CAMPBELL, M.P. (Parliamentary Private Secretary to the Ministry of Health), proposed "The City of Manchester" and said that as representing the Ministry of Health he appreciated to the full the link between gas and health. Gas produced heat and light, the very roots of civilization, and what a plentiful supply of cheap fuel meant to the average housewife was demonstrated to him in a striking manner when he accompanied the Minister of Health (Sir Kingsley Wood) over the model flats at Kensal House in London, where they saw, under the guidance of Sir David Milne-Watson, that easy fuel meant easy cooking and that good cooking considerably helped nutrition. Continuing, Sir Edward congratulated the City of Manchester on its splendid record with regard to housing and health, and recalled that on his last visit to Manchester he accompanied the Minister of Health on a tour of inspection to see what Manchester was doing in this direction, and also in regard to playing fields and open spaces, a subject in which he personally was extremely interested, and which had a close connection with the health campaign which the Prime Minister was opening in a few days' time. After reference to the work of Alderman J. Toole, Sir Edward coupled with the Toast the name of the Lord Mayor of Manchester.

The Rt. Hon. The LORD MAYOR OF MANCHESTER (Alderman Joseph Toole), responding to the Toast, said he was extremely proud of Manchester not only for the opportunities that it had given him personally, but because of the wonderful things it had done in municipal development. This was a very happy night for all of them, although tinged with a little sadness because during the past few weeks they had lost one of their chief officials to whom this Conference was a life's dream. Unhappily Mr. Sillitoe had died, to everyone's regret, before the Conference took place.

Goodwill and Toleration.

Continuing, the Lord Mayor said it was a fine gesture on the part of Sir David Milne-Watson and the British Commercial Gas Association that the Rt. Hon. J. R. Clynes, M.P., should be a guest on the present occasion. Mr. Clynes was retiring from the Presidency of the Gas-Workers Trade Union very shortly, but if this country only had more men of the Clynes

and Milne-Watson type there would be less industrial trouble than there often was. Such a gathering as the present one with these two gentlemen taking part in it was indicative of the one feature that would save this country and the world, and that was goodwill and toleration towards each other. He was very pleased indeed to know there was such goodwill in the Gas Industry. After all, whether they were Directors, merchants, chief engineers, commercial managers, members of the B.C.G.A., staff, or workmen, it must always be remembered that they were all in the Gas Industry to get a living out of it, and what was needed was the greatest possible goodwill. If this was the last thing he said as Lord Mayor of Manchester, he urged employers of labour to recognize that even the workman was an Englishman. He lived in the country and had fought for the country and would fight for it again if need be. The workman, if he was a good and honest workman, was entitled to fair play, and that kind of goodwill all over the world would bring us into a world of peace.

So far as the Conference was concerned, they in Manchester had done all they could to make it a success. It would no doubt be many years before the Association returned to Manchester, but he hoped that all those who had visited it for the Conference would be able to give Manchester a good name. In spite of the fact that it was an industrial centre and one of the greatest in the world, there was no City in Great Britain where there was greater friendship and goodwill.

Alderman Toole said that the Gas Industry was a great example of the application of brains and science to the problems of life. There had been enormous changes in the habits of the people during his lifetime, especially as regards domestic life, and many of them were due to the developments that had taken place in the Gas Industry. It was to the everlasting credit of the Industry that in spite of fierce competition it stood in a better position to-day than ever before. He only asked that the combined brains and the combined brawn of all those in the Industry be used together for the benefit of the whole community because God did not send them there to quarrel. They were sent to live the happiest possible existence and to recognize every man's right to live. The Conference of the B.C.G.A. in Manchester was based fundamentally on that idea, and for that reason he was happy to have been able to welcome the Association and to have done what little he could, together with other members of the Corporation and the staff of the Gas Department, to make the Conference a success.

"The Gas Industry."

The Rt. Hon. J. R. CLYNES, M.P., proposing "The Gas Industry," said he wished to deal very briefly with the human side of this great Industry. Some 48 years ago there started at a street corner in London what was known as the Gas-Workers Union, and a year or so later he became officially associated with that Union when it started in various Lancashire towns. In those days the hours of gas-workers were long, the lowest being a 12-hour shift, but frequently the arrangements were such that a shift exceeded that time and a man had to work without a break for 18 hours for low wages and under exhausting conditions of labour. In the course of years he had visited scores and scores of gas-works and had come to understand the conditions of labour in gas-works; but he was happy to say that gradually, with a greater understanding and with a spread of enlightenment and recognition of the rights of men among gas directors and committees, the conditions improved. Hours of labour were lower and now there were not many gas-works of which it could be said there was not some payment more than wages, payment in terms of a finer relationship between the employers and workmen, clubs, canteens, welfare provision, and opportunities for sports and recreation. In many cases there were facilities of this nature which were never dreamed of 48 years ago. Having been for so many years in touch with the condition of gas-workers, he welcomed with the greatest pleasure the more recent developments that had come about in the Industry. He knew from personal experience the enormous difference as between the early days and now. The Gas Industry had prospered largely because it had been conducted in this spirit. At the present time it was one of the largest employers of labour in the country, standing seventh in the list, and it was also the third largest ratepayer in the country. Into this great Industry had been put the brains of chemists, engineers, scientists, and research workers and also the skill and labour of the workmen, and without this great motive power the Industry could not have obtained its present position.

In coupling with the Toast the name of Sir David Milne-Watson, he spoke of the part which Sir David had played in the smooth operation of the machinery for bringing the employers and workmen together to discuss working conditions. His own Trade Union, said Mr. Clynes, spent thousands and thousands of pounds every year to make that machinery work, and it was a very good investment, because it was far better to pay thousands of pounds to effect a peaceful settlement than to pay many more thousands of pounds in strikes and then fail to get what was wanted. He honoured Sir David Milne-Watson as the man at the head of the great Gas Industry who had been responsible, by his wisdom and fairness, in dealing with the recurring problems in the Industry, for the present amicable relations which existed between both sides. He therefore congratulated the Industry as a whole on the headway it had made and expressed the hope that it would continue to serve the public for many years as it was now doing.

Sir David Milne-Watson Responds.

Sir DAVID MILNE-WATSON, responding to the Toast, said it was a little difficult for him a second time in one day to talk about the Gas Industry. He had delivered himself in the morning at some length on the relationship of the Gas Industry with electricity and coal, a matter of very serious importance to the Industry at the present time; but, of course, he could not see three Members of Parliament at this Dinner without saying that it was all very well for them to feed with the Industry; what was wanted was that they should vote for the Industry in the House of Commons. That was "delivering the goods" as the Gas Industry understood it. [Laughter.]

It was a matter of extreme pleasure to him, said Sir David, to be in Manchester where the B.C.G.A. was born 25 years ago, and they all owed a great debt of gratitude to the B.C.G.A. for what it had done for the Industry. He would not go over the names of the Past-Presidents, but he was pleased Mr. Shadbolt and other leaders of those days were present. Sir William Kay was also in the forefront in those days, and it was a pleasure to see him on the present occasion. Coming to more recent times, Sir David said that everyone had the greatest admiration for Councillor Jackson and for what he had done during his year of office as President of the Association, and it was everybody's hope that Councillor Jackson would long be spared to continue his good work in Manchester for the Gas Industry. Referring to the late Mr. Sillitoe, Sir David said it was a matter of great regret that their old friend was not with them at the Conference, which he had been looking forward to for a long time.

Speaking of the Gas Industry itself, Sir David said it had had to struggle fiercely during the past few years. The odds had been against the Industry, so to speak, in the fact that there had been Governments who had been electrically minded. The Gas Industry had no objection to electricity or competition from it, but he did ask for fair play as against electricity. Sir David expressed the view that the Industry was at the beginning of a great period of prosperity. In their hands lay very largely the problem of smoke abatement, and in this connection he mentioned the visit he had paid that afternoon to Wythenshawe where the Manchester Corporation had a housing estate for no fewer than 100,000 people and where the efforts made to avoid the pollution of the atmosphere by smoke reflected the greatest credit on the Corporation. In London and other places efforts were being made to do likewise and to provide houses for the working classes in which they could enjoy life without the dust and grime associated with slums. At the same time Sir David remarked that he had not seen such a splendid attempt as that which had been made by the Manchester Corporation at Wythenshawe. Sir David also spoke in terms of high praise of the new gas showrooms in Manchester and said that if the citizens of Manchester did not avail themselves of these showrooms, they could no longer be considered to be in the forefront, for it was always understood that what Manchester men thought to-day London would think to-morrow. The new Manchester gas showrooms, however, were indeed in the forefront.

In conclusion, Sir David expressed thanks to the Manchester Corporation on behalf of all the members of the Association, at the same time wishing Manchester all success in their efforts to make the Manchester gas supply the foremost in the country.

"Our Guests."

The PRESIDENT (Councillor W. P. Jackson), proposing "Our Guests," said there were so many distinguished guests present that he could not name them individually but, collectively, he gave them the heartiest of welcomes. Speaking of Sir Edward Campbell, he said it was always a pleasure for Manchester to receive anyone who held an important post in His Majesty's Government, and he added the hope that such visits to Manchester were to the advantage of those concerned and of ultimate help to the Government. As leaders of the Industry he also extended a special welcome to Sir David Milne-Watson and Mr. Clynes. Finally, the President referred to the presence of the Lord Mayor of Manchester who although a member of the Gas Committee was, in his position as Lord Mayor, somewhat paradoxically a guest in his own house. The Toast was coupled with the name of Mr. P. T. Eckersley, M.P.

Mr. P. T. ECKERSLEY, M.P., in his response on behalf of the guests, paid a tribute to the Gas Industry for the progressive spirit in which it was conducted. Continuing, he said that those Members of Parliament present had been given a straight hint by Sir David Milne-Watson that they would have to do something about gas in Parliament. In that connection he said he could give Sir David the assurance that he could not have two better advocates of the Gas Industry in the House of Commons than his two Parliamentary colleagues who were present that evening, and therefore he himself would have to do nothing. [Laughter.] He concluded by expressing thanks to Councillor Jackson and the Gas Committee for a most enjoyable evening.

THE B.C.G.A. CONFERENCE

National Fuel Policy

by

Sir DAVID MILNE-WATSON, Bart., D.L., LL.D.

(Governor of the Gas Light and Coke Company)

Sir David Milne-Watson, Bart.

I should like to make some remarks on the present position of the Gas Industry.

Just behind us is a large-scale Parliamentary Enquiry into our relations with our public; just in front are two pieces of large-scale parliamentary legislation on electricity and coal. In such a situation it may perhaps be interesting to us, and not unhelpful to others, if we take a view of the existing position.

The outcome of the Gas Charges Enquiry was a great encouragement to us, amounting as it did to a recognition of the two main considerations that we have striven in the past few years to bring to the attention and acceptance of the public: First that we are an Industry of vital national importance, essentially irreplaceable either in peace or war, and secondly that we are not a monopoly and are entitled to a treatment at the hands of public authorities that is no more restrictive than that enjoyed by our principal competitors.

Both the result of the Parliamentary Enquiry and our own achievements in the maintenance and increase of our business are reassuring and convincing. But what next? If by our own commercial efforts and by the judgment of a special Parliamentary Committee our position can be taken as very firmly established, are we not entitled to ask, in the name of public interest, that the Government should pay particular care, in any new legislation relating to coal or electricity, that the interests of the great sister fuel industry—the Gas Industry—should not be ignored or overlooked, and that no provisions should be passed or powers conferred that might hamper or handicap them in the service that they are rendering to the community?

The question I ask myself—and I wish to be overheard—is, do the Government propose to weigh and evaluate the merits of the three great fuel industries, and to recognize the impossibility of dealing fairly by the Nation as a whole in the matter of fuel development and output unless due consideration is given to the importance of the Gas Industry?

To this question, when I look at the signs of to-day, I am unable to detect any very evident sign that the right answer will be given. I see the coal industry, recently and firmly established in the enjoyment of a sales monopoly in the country's basic raw material—the raw material not merely of the country's heavy industries, but of the other and higher grade sections of the fuel industry itself. In this new arrangement I find altogether insufficient and ineffective plans for safeguarding the consumer's interest, and I know that if such a position is maintained it means a blow not merely at the particular interests of the Gas Industry, but at the general interests of the great majority of householders.

Statutory Safeguards Essential.

Statutory safeguards to protect coal consumers are, in my judgment, essential, and it is within your knowledge that representations in this regard have already been lodged with the Mines Department.

Turning to the electricity industry, I find as yet no sign whatever of a change in the attitude of the Government towards that industry.

We know that a legacy of confusion and parochial disorganization has hampered the sound development of electricity distribution in the post-war period. None of us here could do anything but approve any efforts, whether Governmental or within the industry, which may have been necessary to place the national distributive system on sound economic lines. Vast sums of money have been poured out for this purpose, considerable results achieved. If in the early days attention was concentrated on providing a secure basis for a service which is undoubtedly a national necessity, without much, if any, thought of the precise function and limits of such development, that was perhaps excusable. But in the publication of the McGowan Report last year and when the Government came forward this year with a further scheme of organization, some thought of final objects, some recognition of the existence of other industries, might have been expected. None whatsoever has been found.

I need not trouble you with the detail of the McGowan recommendations. The whole Report, as perhaps was intended by its terms of reference, moved to one end—unqualified and unconditional—the increase of electrical sales. Like a well-known horseman, the electrical industry was bidden to ride off rapidly in all directions. The use of promotional tariffs side by side with high flat rates, to drive the consumer to new forms of consumption, was specifically advocated, without a thought for the ultimate effect of such developments on the consumer, on other fuel industries, and indeed in some respects on the electricity industry itself. Nothing whatever in the recently issued White Paper qualified this sectional attitude.

Very well. Let us consider for a moment the mechanism and the effect of such a policy, assuming that it could be carried to its logical conclusion in a successful invasion by electricity of the whole field of domestic fuel provision now occupied by ourselves. First, as to size. I will take a single instance—one that is, so to speak, on my own doorstep. In Greater London the peak demand upon the gas companies comes on Sunday morning, when the factories are closed but every household cooker is working hard. To meet the Sunday cooking load of the London gas companies would require twenty electric power stations the size of the monster one at Battersea; it would, in fact, require two and a half times the total installed capacity of generating stations serving the Metropolitan area. Taking a figure of £60 capital expenditure per kilowatt installed, such an expansion would need £300,000,000. This is, you will agree, a formidable figure, and it is for London alone. One might conjecture a figure for the whole country certainly not less than five times as great—equal, in fact, to the entire cost, in loans and taxes, of the country's rearmament programme.

And there would be another effect—a direct effect on electrical economics and on the consumer's pocket. There is no doubt where the peak load would lie; and if, as we are told, electricity for heating and cooking is sold at a halfpenny or so a unit because it is an off peak load, what would become of this price when the heating load soared to a veritable Everest? What will happen—what does happen—when the main constituent of an electricity supply company's peak load is no longer its richly remunerative lighting business? At a halfpenny electricity can compete with gas at normal flat rate on roughly equal terms. Is the public to subscribe hundreds of millions of pounds for electrical construction, and then find that the current costs two, three, or four times as much? I ask the authorities of the electrical industry and their Parliamentary guardians to answer this question which springs directly from their own official defence of dear light and cheap heat.

About Ourselves.

At this stage I would like to interpose a few reflections about another fuel industry—ourselves, in fact. It will do no harm to remember that more than £200,000,000 is invested in the Gas Industry, that 120,000 workers are

directly employed in it (I believe the seventh largest total in the country), that it is at this very moment equipped to give to every family in the country all the chief advantages in domestic heating that electricity could bring. When I go on to add our by-products, 11 million tons of smokeless coke, over 200 million gallons of tar, nearly 80 thousand tons of sulphate of ammonia, 16 million gallons of benzole, and to consider our enormous contribution to the trade of this country in peace and our vital importance as a manufacturer of explosive and oil in war, I can only repeat what I said last autumn. If the Gas Industry did not exist it would have to be invented.

Production Efficiency.

Another thing: We are not likely in any discernible future to find an average of over 25% of the potential heat in coal extracted at electricity generating stations. Allowing for a small loss in distribution and a 75% efficiency of use, that means the consumer recovers in useful heat 15%. Gas and coke as at present carbonized and burnt give 25% in useful heat, and all the by-products as sheer gain. It would seem that very special reasons would be necessary to justify sending coal to the less efficient treatment.

Evidently, then, there are ample reasons for the Government to pause and take a wider view before adopting legislative action without safeguards upon a Report which is, to so large an extent, an elaborate sales programme for the electricity industry.

But in order to be helpful and not merely critical, let me in a very rough and sketchy way try to depict the economic relationship of the Gas and electricity industries as reasonable competition would leave it—a relationship which I am suggesting the Government should do nothing to disturb or impair.

Setting aside, so far as that is humanly possible, one's own sectional bias, I see the proper fields of electrical expansion in Britain as being the huge fields of industrial power, suburban railway transport and rural development, and in the urban domestic field, lighting in particular spheres, household power in all forms, and some portion—but, to be frank, and for reasons which I shall touch upon, not a very large portion—of domestic heating, cooking, and water heating.

For gas and coke, the obvious and natural field is that of household heating in its three phases of cooking food, warming rooms, and heating water, and industrial heat in the provision of an exactly controllable fuel for factory furnace work of almost all kinds.

This is my appreciation of the position—an appreciation which I am sure consumers would confirm if they were genuinely untrammelled in their choice.

Competition Welcome.

It may be suggested that I am talking as though I visualize the exclusion of competition. Not at all. Competition, with each side working on a fair and economic basis, without hidden subsidies or distorting factors of any kind, is exactly what the Gas Industry would welcome. No doubt such competition would yield to electricity some part of the immense field of domestic heating; but my judgment of the genuine effect of freedom of consumer's choice—a judgment made after some years' opportunity to watch it at work—is that the part it would allot to electricity in the fields of cooking, heating, and water heating would be no greater than is compatible with a logical economic relationship between the two industries and between the community and both of them. It is where competition is distorted by the uncontrolled exploitation of the semi-monopoly in lighting which the electrical industry now enjoys, that consumers may be driven into the arms of that industry in a manner which robs them of their freedom of choice and threatens not only the position of other industries, but the proper use of the country's fuel resources, the fundamental economy of the electrical industry itself, and, in a most immediate and short-term sense, the pocket of the consumer.

Another thing: It is questionable whether the consumer is as yet prepared to allow either industry providing fuel-on-tap, or both those industries together, to do the whole job of domestic heating. The time may come when the consumer's attitude will change. But meanwhile he wants solid fuel for certain purposes, or rather for one certain purpose—the fire that heats his living room. And not only so, but in many parts of the country the economics of continuously heating living rooms (which are different from the economics of other forms of domestic heat supply) require the use of solid fuel. Now the Gas Industry has a solid fuel. The electricity industry has none. Each of the fuel-on-tap industries has to make an ally of solid fuel. But in those instances where electricity has matters its own way, it is forced to summon coal to its rescue. Coal is in fact the electricity industry's answer to some of those financial and economic problems, those problems of the peak load on generating stations and the peak load on the consumer's pocket, to which I have referred.

The Question of Coal.

This brings us to the question of coal, which unfortunately there is now no opportunity to consider in detail. I will only say this. The trend for domestic fuelling to be taken over from coal in its raw state by coal in its reformed or rationalized state as gas or electricity is a long-term trend. It has been going on for a long time and it will certainly continue. Although this means that more useful heat will be obtained from every ton of coal mined, it should not mean and it need not mean a diminution in the domestic demand for coal. After all, gas and electricity are both made from coal, and it does not matter, I imagine, particularly to the coal industry, to what uses the coal is put provided the coal is sold. The actual experience of gas companies and others in normal market conditions already proves that where heat is available in simple easily-controlled form, more heat is used; this is particularly true in working-class homes where at present far too little fuel is actually consumed for the provision of full conditions of comfort and cleanliness. I should be surprised if, judged by practicable standards of comfort and convenience, the average working-class household in this country uses more than half an adequate quantity of heat. This will be remedied as domestic facilities improve and as heat becomes available more amply in labour-saving forms at practical levels of cost. Neither in the short-term nor the long-term sense do I see anything to trouble the peace of mind of the coal industry with regard to its outlet in the provision of domestic heat.

It follows that there is no need for any disposition on the part of the coal industry (if such a disposition can be assumed to exist) to seek to delay the expansion of the gas and electricity industries by raising the price of their principal raw material and so seeking to bias the consumer through a more favourable price relationship away from higher grade forms of heat and towards the raw product. Such a step would be bound to defeat itself, because it would be a step against public policy, as no one has better reason to know than the City of Manchester, one of the chief sufferers from the smoke evil and the birthplace of the smoke abatement idea.

I trust that these general reflections upon the relationship between ourselves and our two great fellow industries may afford some indication of the sort of consideration that must be kept in mind if the community is to enjoy the fruits of a well-considered long-term policy taking into account every aspect of the national interest and the consumer's well-being.

In concluding his remarks, Sir David said: My only apology for addressing you at such length on this subject is that at the present moment we have good reason to believe that the Government are considering what kind of Bill to produce as the outcome of the adoption of the McGowan Report and also in relation to the coal industry. Therefore, I felt that if we were not to express our views to-day, the Government would go a long way in the drafting of their measures before they heard the views of the Gas Industry. That is the reason why I introduced this subject at this morning's session.

Vote of Thanks.

The PRESIDENT: I am sure you will agree that Sir David need have made no apology for the very interesting Address he has just given us, and we are deeply grateful to him for having stepped into the breach at rather short notice owing to the unfortunate absence of Mr. Lindsay. We have been very delighted to hear Sir David give us his views which are based on long years of experience in the Industry, and I have pleasure in proposing a very hearty vote of thanks to him.

Councillor DUNCAN (Edinburgh): I have very much pleasure in seconding the vote of thanks to Sir David Milne-Watson, and especially on behalf of the Scottish members present I should like to say how much we are indebted to him for the good service which he has rendered to the Industry and particularly to Scotland. Sir David has distinguished himself by many years of excellent service to an Industry which had its inception in a Scotsman, and I would like to thank him on behalf of the Scotsmen present by saying "Here's tae us; Wha's like us; Damn the few." (Laughter.)

The vote of thanks was carried with hearty acclamation.

THE B.C.G.A. CONFERENCE

S. C. Leslie

Kensal House

The Case for Gas is Proved

by

S. C. LESLIE

(Publicity Manager to the Gas Light and Coke Company)

Kensal House is a model housing estate built by the Gas Light and Coke Company, through its subsidiary the Capitol Housing Association, on a spare portion of a gas-works site at Kensal Green. It is built so as to qualify for subsidy under the Housing Acts, and its rents are fixed so as to yield the normal return on the invested capital. It houses 380 slum dwellers (including 244 children) selected by the Kensington Borough Council from the overcrowded areas of North Kensington.

Socially and architecturally Kensal House has features which all who visit it, both experts and interested laymen, agree are of very great interest. It is not merely a block of flats, but a communal centre including tenants' club, juvenile club, and a nursery school. There are 68 flats, the great majority with three bedrooms. Each has a large living room, a separate kitchen, a bathroom, a balcony opening off the living room, and a small drying balcony. The rents—including rates—are 11s. 6d. (3 bedrooms) and 9s. 6d. (2 bedrooms).

Kensal House was built as a demonstration of the effect on working class life, and of the cost to landlord and tenant, of installing a "model" gas and coke fuel system.

The subject of this Paper is not Kensal House as a social experiment, nor yet the technical side of its fuel installation; for I have no expert knowledge of these matters, and where they are dealt with in the following pages I am indebted to my colleagues on the Sales and Technical side for the information used. The concern of the Paper is with Kensal House as a basis for truthful propaganda, a concrete proof of the claims which a large Gas Company makes in some of the most important issues in which it is before the public. It is possible that such propaganda, and such proof, will also serve the purposes of the rest of the Industry. In that hope the Paper is presented.

The national rehousing programme which is now in full swing is the expression of a considered social policy. The policy springs from the recognition of the community's responsibility towards all its members. The social conscience of Britain is nowadays an active one, and an alert social conscience recognizes the community's responsibility for providing the conditions of decent home and family life—not merely the bare elements of shelter and warmth, but a reasonable degree of comfort, convenience, and leisure, so that health and the pursuit of happiness do not have to be sacrificed to the grinding task of keeping the home together.

The ideas of an enlightened community like our own as to the least that can in decency be provided for working-class people are moving continually upwards. The back-to-back terraces in which the community allowed its working people to be housed a hundred years ago would be very far from acceptable to the public conscience to-day. And many of the working-class houses and blocks of flats put up no longer than 30 or 40 years ago, some of them by public authorities, are, in their design and particularly in their equipment, below anything that would pass muster now.

This improvement of standards goes on all the time, and at any moment one can see at work a tension between the best of the new ideas and the bulk of the old ones. To-day we can look at some publicly erected housing block of 30 or 40 years ago and wonder how people could have been so unimaginative as to provide such conditions. It is a fairly safe prophecy that in 20 or 30 years' time, possibly even less, people will examine a great deal of the new subsidized housing of the present period and will find the same thought springing to their minds. Particularly I think they will wonder at the domestic equipment that has in recent years most commonly been provided, and they will ask themselves why such a burden should have been imposed upon the working housewives of the country.

The charter of women's rights in this country lags a long way behind the charter of men's, and when it comes to limitation of hours of work and the safeguarding of leisure, the position of the housewife is very different from her husband's.

It is difficult to get any exact information as to the length of the working day of most working-class housewives in this country, but some expert investigators have suggested that a day of from 16 to 17 hours is not uncommon, from 14 to 16 hours is the lot of a large number, while only a fairly small number escape with an average of less than 12 hours a day.

Those who have had the opportunity to understand and observe closely the conditions in which women operate in working-class households say that some of this domestic slavery is nothing more than unnecessary habit, and that women get into the way of "messing about" over the details of kitchen work and shopping simply because in the past there has been so little else for them to do. But they also say that much of the trouble springs from the physical conditions in which the woman works and the equipment at her disposal. This becomes very easy to understand if one remembers just what are the tasks upon which time needs to be spent. A lady who ought to know, Miss Amy Sayle, who was Chairman of the Women's Public Health Officials' Association, has summed up the women's domestic preoccupations, as: "Personal cleanliness, domestic cleanliness, planning meals, buying, cooking and storing food, domestic washing, and usually home nursing and the care of children." Of these nine items all, of course, are affected by the general design and circumstances of the home, but beyond this, five at least are directly affected by what we may call the capital equipment of the home and in particular its fuel system and appliances. If these are chosen and installed unimaginatively and without proper knowledge of the real requirements they can, and they do, add hours to the woman's working time. They make her walk miles extra in the day, and carry tons extra in the week, they drive her to her knees when she should be sitting, resting, and in general they keep her dragging around, in pursuit of a meaningless succession of unnecessary tasks—a worse human being, a worse wife, and a worse mother than she could be.

It would be quite unfair to suggest that such considerations are not appreciated in responsible quarters. Indeed, the recent appearance of a Ministry of Health Committee Report on the question of working-class dwellings is the best proof to the contrary. The portions of that Report which deal with fuel equipment cannot be called unsatisfactory from the Gas Industry's point of view, though one misses any hint of a disposition to press vigorously for improvement in the direction of labour-saving

and smoke abatement. Perhaps it is not the business of Departmental Committees to say plainly what is wrong with things as they are, but we are not so inhibited, and it might be well for us to analyze the defects of the existing state of affairs.

The four great weaknesses of the essential machinery in a working-class dwelling are these:

(1) The absence, or more frequently the limitation, of fuel-on-tap for cooking;

(2) The absence of any kind of labour-saving provision of hot water;

(3) The absence of any labour-saving method for heating living rooms;

(4) Last, and very far from least, the absence of a separate living room, or the practical impossibility of using it if it exists, due in either case mainly to the impossibility, a supposed impossibility, of keeping it warm without excessive expenditure.

This last point deserves an additional word. The full importance of it is not always realized. The Kitchen Planning Centre, of London, says that any house designed on the basis of the living room-kitchen, and the scullery, is "obviously not of the labour-saving variety." We might go further and say that any house so designed is inevitably a grievous burden to the woman who runs it, and an obstacle to comfort and convenience for the whole family which inhabits it. Why are such conditions continued and reproduced? Chiefly so that a single fuel source can both cook the food and provide the warmth in winter. The solid fuel range is treated by many experts as though it were a shrine round which domestic life must be arranged. Actually it is much more like an idol to which are sacrificed daily millions of hours of leisure and an uncountable number of lost domestic comforts and satisfactions.

To this list of weaknesses built up from the family point of view we may add one from the national point of view—the fact that our domestic fuel arrangements are stated to be responsible for a good deal more than half the smoke evil, with all that it means in money losses, and damage to health and to life itself.

Now, if those are the main material weaknesses of the working-class household to-day, and if the correction or removal of them is an important social need, how far have we got in tackling the matter satisfactorily, how far have public authorities and Fuel Industries between them moved in the direction of improvement? The Gas Industry does in fact possess the elements of a radical solution, though it may not have been sufficiently vigorous and resolute in pressing this upon the attention of the responsible housing authorities. Those authorities themselves cannot outrun the practical possibilities of the equipment that is offered to them, nor be too experimental in their approach to these questions, but it is possible to wonder whether more weight might not be given to the effect of this question upon the working lives of millions of women, and upon such a social and physical menace as smoke.

The Ministry of Health, the controlling institution, takes up a cautious attitude. Without perhaps saying so in so many words, the Ministry of Health allows it to be known that in considering plans for new buildings it will require special reasons to be given before assenting to anything which departs from the standard and traditional plan of the solid fuel range for living room heating and part of the cooking (with its probable consequence, the combined kitchen-living room). This, you will observe, does not mean that nothing better stands a chance, but only that the general framework within which local authorities are encouraged to do their thinking must tend to perpetuate many of the domestic burdens of the past few decades.

Of the actual situation regarding fuel equipment in subsidized dwellings it is extremely difficult to present any general picture. The Ministry of Health keeps no national records, and so far as I know neither does anyone else. It is, however, possible to give some idea of what has happened in London rehousing work in a random sample of housing estates during the past few years, and this is probably not below the average of national achievement. Of 62 London housing estates, 37 of them owned by Councils and 25 by Societies, comprising 12,522 dwellings, all built in the last 10 years, 43 (comprising 84% of the dwellings) perpetuate the bad old system of cooking in the living room by coal range, or, more usually, by coal combination grate.

In 47 estates, containing 87% of the dwellings, hot water is not obtainable automatically. In 21 it must be heated up on the cooker or in the copper, while in 26 it comes from a boiler behind the grate or range—and one needs little imagination to understand what sort of hot water supply it is which means that not a drop is obtainable, even in the warmer half of the year, unless the kitchen range is specially stoked and lit or a fire is lit in the living room fireplace.

Landlords disposing of public money are naturally moved by a genuine and wholly proper desire to safeguard not merely their own capital construction budgets, but also the household budgets of the families for whom they are providing. We know from the work of various social observers, of whom perhaps the best known is Dr. M'Gonigle, of Stockton, that if the rents of new housing estates are higher than those of the dwellings they replace, money has to be taken from the tenants' all too limited food budget, and they are actually worse off in health in their new homes than they were in the slums. The same thing would obviously be true if fuel costs were higher. Whatever we may say about the obligation on the community and its public authorities to lighten the load on women by proper equipment in new housing, we will obviously remember that there is no sense in crying for the moon; that unless these improvements can be achieved without any undue burden upon the household budget then their achievement must be postponed until a happier day.

But supposing that a Company, or an Industry, can come to the Ministry of Health, the local authorities, and the community generally and say this:

We can offer a system which provides fuel-on-tap for all cooking purposes, and not merely for some of them; which includes a complete automatic service of hot water both at the bath and at the kitchen sink; which enables the working kitchen to be kept quite separate from the family living room; which heats that living room by a simple range—smokeless, automatically ignited, and easily cleaned. We can do this by a system of equipment at a reasonable capital cost; and finally we can do it in a way which will make inroads upon the tenants' purses not greater, but less than the sums which they are accustomed to spend on the deficient fuel systems they now use.

If we can say this, then it is clear that we are entitled to say plainly what we think, and what any competent humane observer must think, of the normal domestic machinery in the great majority of working-class households, new as well as old.

We are entitled to point to the grievous toll it exacts—in waste of labour and waste of time, and in consequent handicap to the health of the housewife and the well-being of her family.

We are entitled to keep people reminded that these ordinary systems spoil home life by crowding the family round the kitchen, the domestic workshop. Cooking and dish washing are fine respectable operations, but no more to be carried out interminably under the noses and before the eyes of those who benefit from them than are chimney-sweeping, clothes washing, painting the walls, or emptying the dustbins. And we can add that the enforced process of roasting the family in order to heat the water is one that strikes us as neither hygienic nor humane.

Finally we can add, that these current fuel systems, so widely accepted and even defended, are as stupid a way of creating unfruitful employment as the well-known plan for hiring unemployed men to dig holes and then fill them up again. The ordinary domestic fuel system of this country is quite like that; it means that you burn coal to get water to wash clothes and people and rooms that are dirtied very largely by smoke from the coal which you and the others are burning to get hot water for cleaning! The spectacle of several million British housewives chasing their own tails like monkeys in this way because they have no alternative is not edifying, still less is the spectacle of an annual waste of millions of pounds, and a heightened death and disease rate, through the darkening and poisoning of city air by smoke.

Now perhaps we may turn to Kensal House. The fuel service which it embodies is a model one, but not in the sense that it is inapplicable to ordinary conditions in ordinary housing estates. On the contrary, it is a flexible system, and even though it makes possible and economical the separation of kitchen from living room, it can be used, to better effect than ordinary systems, in dwellings where the kitchen-living room is an unavoidable feature.

We have been dealing in this Paper with dwellings erected by local authorities and housing societies, the category to which Kensal House itself belongs. But obviously its lessons apply, in some degree or other, to all working-class dwellings, new and old. If there is no bath, the need for continuous water supplies at the sink remains. If living rooms and kitchens are not separate, the case against smoke and dirt still stands. In all this there are the seeds of a complete sales policy for the Gas Industry in relation to its working-class consumers—a policy which it would be a separate task to consider in more detail. But to resume:

The fuel system at Kensal House consists of a cooker with thermostatic oven control, an instantaneous water heater serving kitchen and bath, a movable wash copper

and gas iron in the kitchen, a gas-ignited coke grate in the living room, a gas fire in the main bedroom and gas points in the others, and switch-controlled gas lighting.

After what has been said about fuel systems in general, it is unnecessary to spend much time in explaining how this one works out in practice. It will not surprise you to hear that the housewives who use it, some of them from slum basements, but some of them moved from other rehousing estates with traditional fuel systems, say that their working life is quite radically altered and simplified in the new conditions. Their working day is shorter, they find themselves with unexpected and unusual hours of leisure which they can spend in the clubrooms or with their children or in any other way they like. Both they and their families naturally appreciate the opportunity of spending the evening and other leisure hours in the sort of conditions in which you and I spend ours, free from the sights, sounds, and smells of cooking and washing up, with weekly spells of washing and ironing thrown in.

Now let us turn to the question of cost. A number of attempts have been made to estimate the actual present costs of fuel in working-class households. The most recent is Mr. Seebohm Rowntree's in his book, "The Human Needs of Labour." Mr. Rowntree set aside for fuel and light for a family with three children and a wage of 53s. the sum of 4s. 4d. Bear in mind the fact that this figure is not put forward as the cost of a proper service. It is clear that Mr. Rowntree was concerned simply with the cost of setting the bare minimum of heat and light for domestic purposes without regard to the labour, the dirt and any other unfortunate consequences attendant upon getting it.

Dr. M'Gonigle in Stockton found an absolute minimum figure of expenditure on fuel and light for incomes below 35s. per week of 3s. 5¼d. for the summer, which on his own reckoning represents at least 4s. 6d. as an all-the-year-round average. For incomes between 45s. and 55s. per week, which probably cover the greatest single section of the working-class community, he found a fuel expenditure for the summer of 4s. 11d., representing an all-the-year-round average of well over 6s.

This year the Gas Light and Coke Company has had carried out for it in London working-class boroughs a very thorough enquiry into fuel usage in many aspects. The results will be published later, and at present nothing more than preliminary indications on this one point of cost can be given; but it is clear that the weekly fuel bill in the average London working-class household averages about 6s. a week as an all-the-year-round mean.

Remember that all these estimates (and others which have been made, all tending to confirm the general effect of these three) deal with expenditure on fuel systems which involve doing a great part of the cooking and nearly all the living-room heating by coal, with very seldom a really adequate hot water service, and in most instances none at all.

In Kensal House (where the "average" population of a flat is two adults and 3½ children) figures of fuel consumption have been taken out over a period of six months, covering in proper proportions the warm and the cold weather. The average consumption of gas for all the families is almost exactly 4 therms a week. On the two-part tariff which the Gas Light and Coke Company offers to housing estates of this type, a weekly standing charge of 1s. 5d. and gas at 4d. per therm, the cost of 4 therms of gas to the tenant is 2s. 9d. In addition, the coke used represents an all-the-year-round average of about 1s. 7d. per week, making a total fuel and light bill for all purposes of 4s. 4d. in the average flat.*

That figure must strike anyone who looks into these questions as something of a social portent. It means that a really adequate fuel service, with which middle-class families in this country with incomes of several hundreds a year would be well content—which, in fact, many hundreds of thousands of middle-class families would envy—can be had at a fuel cost which is not merely no greater than the normal expenditure in the same district on a very inadequate fuel service, but is very probably less.

So far as can be reckoned, the average use of hot water in Kensal House approximates to 150 gallons a week for all purposes, which is in line with the normal working-class consumption, and represents adequate kitchen supplies, *plus* one bath per head per week. The Ministry of Health Committee on the construction of flats for the working classes, points to a usage of 300 gallons a week as a reasonable ideal. At Kensal House, as this idea penetrates and as the significance of extra gas at 4d. a therm begins to be realized, hot water consumption will undoubtedly rise towards the higher figure. The increase is unlikely to take place in the kitchen, where adequate use is probably already made of hot water. An extra 150 gallons in the bathroom means that the average family can bathe some three times a week instead of once. 150 gallons a week of hot water used in this way can be had for a little over a therm—say, an extra 5d. a week, which would bring the average total to roughly 4s. 9d.

There is another observation to be made about the costs at Kensal House. The lighting is by gas. Treating this as a marginal usage on the two-part tariff, it represents (at half a therm a week) an average expenditure of 2d.; or, on the normal flat rate of charge, 4½d. or 5d. The Gas Industry knows that in the great majority of new housing estates which have recently been and will yet be constructed in this country, gas lighting is unlikely to be installed. But it knows something else as well. It knows that if the Kensal House system of heating, cooking and water heating were installed in these estates, leaving electricity to look after the lighting, the electric light bill, under present circumstances, would not be 2d. a week or 4d. or 5d. a week either. It would be more like 1s. 6d.—very rarely less than 1s., and in many instances 2s. or more. So that a combination of the Kensal House system with electric lighting at present rates would bring the total fuel cost up very much nearer to the sort of expenditures which are now normal in London working class suburbs—in other words, would deprive the system of its present claim to offer a money saving as well as great additional amenities.

To this the electrical advocate would—to judge from experience—no doubt rejoin that if housing authorities or tenants want to divide their allegiance between two different forms of fuel, they must take the natural consequences in higher costs, and that the real answer is, if electricity is wanted for lighting, to let electricity do the whole job.

Now if this argument implies that electricity would do the whole job in anything like the same way as the job is done at Kensal House and for anything like the same money, it is specious and misleading. It is an argument which in one form or another is continually used, and it is high time that the Gas Industry showed it up.

Perhaps one may be forgiven for putting this in plain terms. The Electricity Industry has no wish and no intention to provide a fuel system in working class houses which offers the full amenities available at Kensal House. The official electrical programme for rehousing in low cost dwellings includes—indeed it is not too much to say that it absolutely depends upon—*the provision of a coal range for all the living room heating and most of the cooking.* So far as working class rehousing is concerned, the much vaunted all-electric dwelling is a myth. It never has existed and it probably never will. The fuel installation offered in low cost flats by the electricity industry is, in the sense in which the tenants of Kensal House have come to understand the words, not clean, not smokeless, not labour-saving, and not complete.

I well remember one of my very first experiences as a member of the Gas Industry, which was to listen to the Parliamentary hearings when my Company was granted the bill which gives it the right to install gas piping in "council" houses. Our chief opponent was the Borough of West Ham, and that extremely able and successful Electrical Engineer, Mr. J. W. Townley, the Borough Engineer of West Ham, was in the witness chair. It was elicited from him that in all the so-called all-electric houses in West Ham a coal range is fitted in the kitchen to do the heating and a great deal of the cooking in the winter (and, though Mr. Townley did not say so, in much of the spring and autumn, too). He was asked why, and he replied: "We encourage them to use their coal fires during the winter months because it is cheaper for themselves and it keeps the cooker load off our peak." A little later on an obviously much surprised and slightly scandalized Labour member of the House of Commons Committee cross-examined Mr. Townley at some length about this remark, and drew from him an extremely interesting amplification and confirmation of his points.

* In comparing the Kensal House tenants' expenditure with other working class budgets, the question how far each includes a contribution towards the cost of appliances must be borne in mind. The Kensal House figure includes the equivalent of the extra payment per therm which prepayment users make to cover services, meter, cooker, &c. On the other hand it does not include the weekly payments on account of rentals of extra appliances, electric wiring, &c., which are made in many households. These are conjectured to average perhaps 4d. or 5d. per week for all London working class households, and this figure may be subtracted from the average London expenditures previously indicated.

As regards capital costs, a weekly sum of 1s. 5d. would cover the Kensal House installation (other than what is covered by tenants' payments). This 1s. 5d. includes maintenance, and a very conservative depreciation policy. It compares with about 10d. or 1s. for the ordinary minimal equipment (lighting, range, tank, &c.), allowing this no maintenance and a longer life on paper. As against this difference, the Kensal House equipment (apart from its completeness with a lower fuel cost), means a saving in floor space and construction costs through simplified flues, a saving in maintenance through absence of smoke, and a saving to the tenant in cleaning costs. On the question of capital costing, results speak for themselves; the Kensal House rents compare more than favourably with general London levels, and they include provision for fuel equipment.

Mr. Townley did say, in his own defence, that just as electricity made an ally of coal, so the Gas Industry made an ally of coke. Now in a full gas installation coke is used for living room heating alone and all the cooking is by heat on-tap, while in an "electrical" dwelling half the cooking is done by coal; but quite apart from this, it was interesting to see that for the purposes of this argument Mr. Townley did not suggest any difference between the two solid fuels. The whole domestic smoke problem of this country, with all that it means in wasted money, ill-health, dirt, and extra labour, was dismissed as though it did not exist.

The two main facts of the position were very neatly and quite honestly summarized by Mr. Townley in the words which I have quoted. For one thing, as he indicated, electricity departments do not really want the whole working-class cooking and heating load—in fact, would do a good deal to avoid getting it. They could not cope with it without upsetting their whole existing cost structure and methods of charge, and without slowing down, or halting through increased prices, the domestic progress of their industry. They need the coal range—the wizard of modernity must have at his elbow the smoky spirit of nineteenth century fuel. Perhaps that's why little Mr. "I'm Electric" is always painted black.

Now, since all this is so, it means an end of the electrical contention that that industry can take over the task of providing fuel for working-class households and can do it in the way that it is done at Kensal House. So we come back to look again at this question of electric light costing a working-class family anything from 1s. to 2s. a week unless electricity is taken for other services—when the lighting cost comes down to a few pence.

If the view is taken that for all heating purposes the Kensal House idea is the right one, the community may come to the conclusion that lighting flat rates of such figures as 5d. and 6d. and 7d. per unit are not in accordance with public policy. The electricity industry would then, in one way or another, be led to reduce its charges so that electric light can be used in a working-class household at a cost not much above that of gas on the flat rate. It is possible that this might involve the abandonment or the diminution of those promotional efforts (largely or entirely dependent, as the M'Gowan Report makes clear, on the receipt of high prices for lighting) by which electricity supply companies now seek to obtain increased domestic business. But the community may the more cheerfully envisage such an abandonment, since part of the effect of these promotional policies, where they do succeed, is to fasten the combination coal grate firmly once again into its traditional place on the working-class hearth.

What Kensal House Offers.

Let us end by setting out in summary form the kind of material Kensal House offers us for fundamental sales work and propaganda in the course of the next few years.

(1) It proves that the Gas Industry can offer a complete labour-saving fuel service for working-class households, with all that this means in increased leisure, better health, and greater happiness, at a cost below the present normal fuel budget.

(2) It proves that this can be done even at ordinary flat rate charges for gas—assuming that working-class ideas and customs in such matters as the use of hot water remain unchanged; and furthermore that as the Gas Industry moves over to promotional tariffs, a very much greater provision of hot water can be made at figures which will still be below the present normal expenditure on fuel.

(3) When we consider Kensal House alongside other types of fuel installation and their cost, it is seen to prove, not merely that Gas can offer this full service below present average costs, but also that *only* Gas can do so. It thus offers to the Industry not merely a defensive platform, but a basis for a genuine forward policy.

(4) When the Kensal House installation is considered in relation to the prevalent use of electric lighting, it offers fresh evidence of the desirability on broad social grounds of inducing those electricity companies which charge working-class people high rates for lighting to bring charges down to a figure not more than twice the average price of current in the district. It suggests that the present policy of many electric supply undertakings, of seeking by discriminatory tariffs to take over the additional domestic business in heating, cooking, etc., and to share it on a generous scale with the coal range is, from the social point of view, a retrograde step by comparison with the prospect of early emergence from the era of smoke, dirt, and labour—the prospect which, as the living demonstration at Kensal House now shows, the Gas Industry can offer.

Discussion.

Councillor A. S. GILES (Birmingham): Those of us who are associated with municipal gas undertakings have to convince our colleagues, who are suspicious of us as members of Gas Committees and think that we have something up our sleeves in advocating the use of our commodity. I had been hoping that Mr. Leslie would have given us a little more information with regard to Kensal House as a housing proposition, because we have to prove that such a scheme can be made an economic proposition. Mr. Leslie has referred to 74s. per week as the wage of some of the tenants of these flats, and I am glad to hear that he is dealing with such a prosperous community. Such a wage, however, is rather high for my area.

Mr. J. H. CLEGG (Southport): Can the Author tell us if the gas equipment and the coke fire equipment have been provided free, or has the tenant anything to pay for the apparatus?

Mr. LESLIE: That is covered by the rent. I think the question of wages is rather outside the matter of proving the case for gas. But I understand that Kensal House has been built on conditions which are available to any other estate built under the provisions of the Housing Acts. The subsidy has been fixed on the same lines. The land, although it is gas-works land, has been valued publicly on the normal basis and the rents have been fixed to include rates and to cover that part of the cost of the fuel installation which is not covered in the figure of 4s. 4d. which I mentioned. It covers rates and fuel installation and the normal rate of interest on the capital sum invested, which for housing estates is 3¼%. I think, therefore, the estate is comparable with others; but even if it were not, the gas installation can be considered separately. Perhaps I had better read two paragraphs from the Paper which, I think, make the point clear:

> "In comparing the Kensal House tenants' expenditure with other working-class budgets, the question how far each includes a contribution towards the cost of appliances must be borne in mind. The Kensal House figure includes the equivalent of the extra payment per therm which prepayment users make to cover services, meter, cooker, &c. On the other hand, it does not include the weekly payments on account of rentals of extra appliances, electric wiring, &c., which are made in many households. These are conjectured to average perhaps 4d. or 5d. per week for all London working-class households, and this figure may be subtracted from the average London expenditures previously indicated.
>
> "As regards capital costs, a weekly sum of 1s. 5d. would cover the Kensal House installation (other than what is covered by tenants' payments). This 1s. 5d. includes maintenance, and a very conservative depreciation policy. It compares with about 10d. or 1s. for the ordinary minimal equipment (lighting, range, tank, &c.), allowing this no maintenance and a longer life on paper. As against this difference, the Kensal House equipment (apart from its completeness with a lower fuel cost), means a saving in floor space and construction costs through simplified flues, a saving in maintenance through absence of smoke, and a saving to the tenant in cleaning costs. On the question of capital costing, results speak for themselves; the Kensal House rents compare more than favourably with general London levels, and they include provision for fuel equipment."

If it were a matter of installing the equipment in a new property and supposing that you add to the tenant's bill, for the purpose of general comparison, the whole of the sum necessary to meet capital costs, that will bring the average up to 5s. 9d. Assuming the landlord contributed nothing at all to the cost of the fuel installation, you are still not above, and probably you are below, the average expenditure on fuel on a comparable equipment of another kind.

Councillor G. CATTO, J.P. (Aberdeen): The Paper brings home to us once more very forcibly how much we are indebted to that enterprising Company, the Gas Light and Coke Company, for the research work it is carrying out in connection with the Industry, particularly in dealing with the problem discussed in the Paper, which problem has been exercising the minds of many of us, and especially those who come from some of the big industrial centres. While in London this problem may have to be dealt with on a larger scale, the methods adopted at Kensal House can be modified in accordance with the conditions in other towns, and, therefore, we are extremely indebted to Mr. Leslie for the information which he has been able to collect and which I am sure will enable us to find out in other parts just how we can apply the same ideas. I suggest that the delegates to the Conference should take back to their respective undertakings all that Mr. Leslie has told them, because I feel that the enterprise of the Gas Light and Coke Company has shown that we have a strong and unanswerable case against electricity. I have great pleasure in asking you to accord Mr. Leslie and the Gas Light and Coke Company a very hearty vote of thanks for this Paper.

Mr. H. C. SMITH (Tottenham and District Gas Company): It gives me great pleasure to second this vote of thanks to Mr. Leslie. It was my privilege a few days ago to visit Kensal House. By the kindness of the Gas Light and Coke Company, my Company were allowed to invite some of our local Mayors, Chairmen of Housing Committees, and Surveyors to see what has been done there, and really the results are amazing. It has done something very much more than just a piece of propaganda; it has done a very great public work.

Mr. LESLIE responded to the vote of thanks.

THE B.C.G.A. CONFERENCE

Col. W. M. Carr

Planned Selling

by

Col. W. M. CARR, O.B.E., T.D.

(Managing-Director of the United Kingdom Gas Corporation)

The Gas Industry, in common with others, is rapidly becoming more appreciative of the necessity of better selling, and all that it implies; if it is to fulfil to the utmost its function as the most efficient clean fuel, much greater effort must be made in the future.

The selling of gas differs from the single commercial transaction as between an ordinary seller and buyer of goods in that it is a sale of a commodity, and a continuous service necessitating a clear understanding of the economics of the transaction by both parties to the bargain.

An understanding of the incidence of costs and charges is necessarily difficult in the sale of a commodity *plus* a service. It must be understood that it is much cheaper to sell 50 therms of gas to a consumer already consuming 100 therms in a year than it is to sell 50 therms of gas to an entirely new consumer for the reason that, approximately, three-fifths of the total costs arise in administration and distribution services as distinct from manufacturing costs, and these costs are, in the main, proportional to the number of consumers.

The incidence of costs as affecting the price at which we can afford to sell must be considered in relation to the economics of the average household where a limited sum is available for the services of cooking, room heating, water heating, lighting, and the no less important domestic service of refrigeration.

It must, therefore, be our constant endeavour to offer gas service on such terms and conditions that the total fuel budget of the house is not materially increased by reason of the substitution of clean coal in the form of gas or of smokeless fuel in the form of coke, for the raw product.

At the Annual Conference of this Association in September, 1932, I presented a Paper on the "Development of the Sale of Gas for Industrial Purposes" when I pointed out the great advantage of industrial load as a cost reducing factor in that the incidence of standing charges, administration charges, and distribution costs is so low as to form a substantial reduction in average overhead costs; equally does increased consumption per existing domestic consumer reduce the incidence of standing charges and overhead costs.

In my opinion, we can only claim that we are progressing where our average gas consumption per consumer is increasing. I suggest, from experience, that the best way in which this can be achieved is by the introduction of simple optional tariffs that will enable the total heat requirements for all domestic purposes to be obtained at a total cost which does not exceed the present total average domestic budget for fuel. The householder then receives, as his or her part of the bargain, the great advantages of cleanliness and labour saving, to say nothing of improved domestic conditions for the benefit of the community as a whole.

It should be appreciated that our problem of selling gas on the above basis has been simplified by the greatly improved efficiency of modern gas appliances.

There is no other fuel which can be automatically controlled with such ease and perfection. The use of the thermostat in the modern gas cooker has simplified cooking, and reduced labour in its supervision. Equally so, does it give even control in room heating. The gas instantaneous water heater is without rival in the efficient provision of hot water at any required temperature for any domestic purpose to the great advantage of the health of the home, and finally, I would mention, refrigeration, and I venture to say that the domestic refrigerator—which is so efficiently operated by a small gas flame—is to-day supreme in the matter of silence, reliability, and efficiency. I could mention many other instances so well known to you all to illustrate the great advantage of the gas service which we have to sell to the Nation.

Competition.

In considering the extension of the service we can efficiently render to the public we serve, we must not lose sight of the competition which we have to face from electricity and other fuels. It is clear that in the lighting field electricity continues, and will continue, to find favour, particularly having regard to the advantage of electricity for wireless and mechanized domestic operations; on the other hand, by means of the special inducement of lower rates, electricity is endeavouring to compete in cooking and heating. Its efficiency in the latter spheres is, however, so much below that of gas that it is no competitor except where gas service is poor and charges are inordinately high.

The question of a National fuel policy and organization of competing Public Utility Undertakings does not come within the ambit of this Address, but I am convinced that both electricity and gas can be used in conjunction to bring the maximum benefit to the consumer.

In its early days the Gas Industry could confine itself to delivering gas like a commodity at the premises of the consumer; it has now to provide a service, and the utility of gas is judged by the success with which gas appliances, both domestic and industrial, carry out the purpose for which they are installed. In the past, the main problems centred on the production of gas and its distribution; to-day, and in the future, the major problem is that of service.

Co-operation for Better Service.

During recent years our Industry has progressed as a result of forces which are making for the co-ordination of working. The work of the National Bodies and the development of Holding Companies have assisted. We have, within recent years, received much greater freedom in regard to tariff policy although we are still, in a measure, bound by restrictions which are not suited to the highly competitive conditions under which we have to operate.

The major problem as affecting service is that of grouping the Industry in order to provide common technical, financial, and commercial facilities. We are split up into too many small and independent units. At the present time there are some 1,200 Undertakings in the country varying in size from a one man Company with a capital of a few hundred pounds to the Gas Light and Coke Company whose output of gas represents approximately one-sixth of the national sales. I do not wish to imply that there is a great difference in the efficiency of production as between a large and a medium-sized Undertaking, and the economy of linking up by pipe line depends largely upon the density of population. It is seldom, however, that linking up pays in rural areas beyond a limited distance. Co-ordination is necessary quite apart from considerations of efficiency in production and linking up, and, as has been indicated, the major problem is one of service to the consumer.

The widening functions of our Industry to-day calls for the increasing employment of specialists, not only in production, but in selling and utilization. Technical sales service has become increasingly important, and in the writer's opinion research in gas utilization should equal if not transcend research in manufacture.

Under these conditions the small Undertaking working on its own has difficulty in maintaining its position in that it cannot afford the services of the necessarily expensive

specialists, and the Manager is usually too occupied with the routine of production to study and keep himself up-to-date in all new development in utilization. There is, therefore, a sound case for co-ordination of Gas Undertakings in organized groups, and it is in this direction that Holding Companies are performing a useful national service in the provision of specialized services as applied to sales development in groups of Undertakings.

The Holding Company must look to the provision of better service and cheaper gas as being the only sure means of consolidating its holding.

Our chief function is to sell gas. The improvements in production, distribution, utilization, the efficient regulation and marketing of by-products, and the marketing of the most efficient appliances are all means to enable us to sell gas, and gas service, as cheaply as possible.

It is of vital importance that we should ensure that all consumers are equipped with the most efficient and up-to-date appliances; this applies not only to domestic, but also to industrial, users. Gas Undertakings serving in industrial areas must appreciate the requirements of all the industries in that area, the majority of which it will be found can make use of gas. It must be able to offer service to the manufacturer, which will ensure that he is equipped with the most efficient plant for his particular requirements, and, to achieve this, the employment of expert personnel to investigate those requirements, and to design and provide the most efficient equipment, is essential.

Tariffs and Gas Charges.

The question of the cost of our service to the user is, as has been indicated, of paramount importance. We must adopt such tariffs as will enable the consumer to utilize gas, after he has paid a comparatively small amount as standing and administrative charges, at such a cost that it will be readily used for the displacement of cruder methods of heating, and this is made practicable by the efficiency of modern gas appliances.

It has been our practice for many years to consider the average cost of manufacture, distribution, and administration per therm as representing the cost at which we can afford to supply our commodity, and in this respect we lag behind our principal competitor in the lighting field.

One frequently hears the remark that an Undertaking cannot afford to introduce a sales promotional tariff on the assumption that the income without increased consumption will be insufficient to meet costs, as compared with the present average income. It is more in accord with real truth to say that it cannot afford to neglect the introduction of sales promotional tariffs, as by this means only can it hope to obtain increased consumption per consumer.

The writer has now had ten years' experience in the operation of sales promotional tariffs; the first two-part tariff for industrial purposes was introduced by the Stretford and District Gas Board in the year 1927, and was described in his Paper "Development of the Sale of Gas for Industrial Purposes," read before this Association in 1932.

On Oct. 1, 1934, an optional two-part tariff for domestic purposes was introduced at Stretford on the following scales:—

—	Commodity Charge.	Standing Charge.
Domestic consumers by ordinary meter	3½d. per therm net	10s. per quarter
Domestic consumers by prepayment meter	5d. ,, ,,	6d. per week

A survey of domestic consumers of all classes showed that the average net increase in gas consumption by consumers who have adopted the optional two-part tariff was 37 therms per annum, as compared with previous consumptions at standard rates.

Particulars of the gas consumption at the end of the last financial year ended March 31, 1937, are given in Table 1.

It will be observed that out of a total of 30,764 domestic consumers 6,343 had at that date adopted the optional tariff, approximately 21%. The gas consumed by the consumer on the optional tariff amounted to no less than 35% of the total domestic gas sales.

In the financial year ended March 31, 1934, prior to the introduction of the optional tariff the total number of prepayment meter consumers was 12,812; by March 31, 1937, this number had increased to 17,411, and it is interesting to observe that the average consumption per prepayment meter consumer has in the same period increased by 1·5%. This result does not appear spectacular,

TABLE 1.—*Stretford and District Gas Board.*

[Analysis of Gas Sales for Year Ended 31st March, 1937.]

—	No. of Consumers.	Consumption. Therms.	% of Total Domestic Consumption.	Consumption per Consumer. Therms.	Average Price Received. Pence per Therm.
Ordinary meters—					
At published price .	10,948	853,310	33·08	77·94	9·30
At two-part tariff rate	2,405	478,513	18·55	198.96	5·47
Prepayment meters—					
At published price .	13,473	822.160	31·87	61·02	10·47
At two-part tariff rate	3,938	425,127	16·50	107·96	6·96
Total . . .	30.764	2,579,110	100·00 % of Gas Made. 42·02	86·83	8·57
Industrial consumers under contract. .	210	2,856,869	46·56	13,604·14	3·47
Public lighting . . .	..	185,858	3·03	..	9·23
Total . . .	..	5,621,837	91·61	..	6·00

but it should be remembered that the 4,599 new prepayment consumers are in houses equipped with electric lighting, and were it not for the optional tariff it is certain that there would have been a substantial reduction in consumption per consumer, as there was at least 50% gas lighting in the houses of prepayment consumers at March 31, 1934.

The optional two-part tariff has not only proved a definite aid to sales, but has strengthened the financial position of the undertaking.

It should be mentioned that in the same period the undertaking has had the advantage of greatly increased industrial sales, which have been increased from 1,268,172 therms in the year ended March 31, 1934, to 2,856,869 therms in the last financial year.

Experience has shown that a two-part tariff should be sold not as a means of effecting a reduction in price but rather as a means of providing cheap gas for all consumers who extend its use in place of other fuels.

Service.

The introduction of Sales Promotional Tariffs represents only one step in sales organization. The first essential is Service, and however favourable gas prices may be or however well sales planning may be organized, it will not succeed unless the service in the matter of supply is, in every way, satisfactory. It is essential, therefore, that we should satisfy ourselves that our mains, services, and meters are of a proper size so that all consumers may receive an adequate volume of gas at times of peak demand, and, further, that the gas is maintained at a constant and equitable pressure, is of constant specific gravity and conforms without variation to the declared calorific value.

The importance of the maintenance of these conditions is well appreciated by all of us; it is, nevertheless, true that there are still many instances where quality and pressure are too variable, and the supply is insufficient at the time of peak demand.

In principle the maintenance of proper service and the satisfaction of existing consumers must be the first consideration, and we should not seek new business until we are fully satisfied that every existing consumer is adequately and efficiently supplied.

Sales Plan.

It is necessary that there should be maintained the closest co-operation and inter-working between the service and sales departments to form the basis of sales organization.

If we are satisfied that our service is good we can proceed with confidence in our Sales Plans, which can be pushed forward with conviction in the knowledge and belief that we can fully satisfy the consumer's requirements.

Our sales policies are still much too haphazard, and with a few notable exceptions the majority of Undertakings proceed without any definite plan.

First of all it is essential that the personnel concerned in selling should be well trained and themselves have complete understanding of, and confidence in, the sales proposals they are to put forward. As a preliminary we must equip ourselves with the most complete information possible as to sales possibilities; at the same time our information must be so maintained that, whilst enabling us to find new gas consumption, it keeps before us the position of existing gas consumption, it being more economic to maintain and increase the load of an existing consumer than to obtain a new one.

The importance of maintaining the fullest possible in-

formation as to each consumer cannot be over-emphasized; it must also be maintained up to date; any complaints which have expressed a consumer's dissatisfaction with service should be permanently recorded on the consumer's record sheet as should visits for maintenance and salesmen's visits and reports.

The information should extend to all premises within the area of supply of the Gas Undertaking irrespective of whether they are gas consumers or not, and should record not only full particulars of the gas appliances installed, but also full particulars of all other appliances, and, in the case of gas consumers' premises, indicate whether the consumption of gas is increasing or falling.

The main object of all sales efforts is increased gas consumption, and this end is achieved by increasing the sale of appliances at the lowest possible cost of selling, and low costs are only possible where sales organization is carried out to a definite plan providing for:—

1. The setting up of definite sales objectives and the correct time for attempting their achievement.
2. The comparison of sales achieved with those attempted, and the ascertainment of the reasons for the differences.
3. The measurement of sales effort, and appreciation of causes of failure.

The foregoing procedure presupposes complete information and consequent knowledge relative to sales opportunities without which definite and consistent results are impossible of achievement.

It is important that the essential information should be recorded so as to ensure that time for action in each instance is clearly indicated, and all consumers shown to have a falling consumption should be indicated for special and immediate sales effort.

The consumers' records, which preferably should be maintained in a visible type of equipment designed to permit of their extraction and return with the maximum speed of operation, should provide for:—

1. The maintenance of complete information for each premises relative to gas and competitive appliances.
2. A record of maintenance calls, and also salesmen's calls and effort, which should include for visible indication of the time for follow-up calls where sales possibilities exist.
3. A record of gas consumption shown comparatively over a period of years with means of visible indication where consumption is falling or a fall in consumption is feared.
4. A visible method of indicating and separating types of consumers, also types of gas and competitive appliances.

The days of canvassing for catchpenny business by knocking at the house door have gone. The fact that we have the opportunity for carrying out maintenance provides the best form of introduction as a basis for further sales.

It is for this reason that the maintenance man should precede the salesman, and prepare the ground for him.

The allocation of a definite area with a definite number of premises to each district salesman is imperative as he should know his customers and be to them the embodiment of gas service.

The number of premises, that is, gas consumers, and prospects that can be satisfactorily worked by each district salesman is at the moment a matter of conjecture; it is suggested that 3,000 is probably a maximum figure.

The scope of this Paper cannot be extended to a detailed description of the method of recording and operating a gas sales organization on the lines described. Such an organization has been installed in the Stretford Undertaking, and results so far indicate great possibilities.

Working as I have been in an Undertaking which has doubled its sales in the last five years, I have the greatest confidence in the future of our Industry, and whilst appreciating the importance of the work of this Association, and the necessity of advertising and publicity in educating the public we serve in the great advantages of gas utilization from the point of view of the general health of the Nation, I have, in this short Address, endeavoured to illustrate how vitally important it is that we should not lose sight of the fact that the basis of our future development rests upon the service which we can give to-day.

A bold policy in the introduction of sales promotional tariffs is required; service to ensure that our consumers have only the best appliances most suited to their particular requirements maintained at their maximum efficiency at all times is essential. A well-trained and efficient selling staff to operate in definite areas must be maintained, and selling organization carried out to a definite plan of campaign in which the information is first completed, the intention clearly defined, and the execution carried out by personnel confident of their ability to succeed.

Discussion.

Mr. R. W. Lowman (Gas Light and Coke Company): Colonel Carr calls attention to the necessity for co-ordination of effort. He feels, and I feel with him, that the holding company movement, if conducted wisely and with the idea of co-ordinated effort as its object, will do much to overcome a handicap which undoubtedly exists among the smaller undertakings. I feel, however, that there is an alternative method, or indeed an additional method, which has the merit of being able to be put into operation quickly and with a ready-made organization to help it along. I am referring to the group marketing scheme, the pioneer movement of which was started by the London group.

Holding companies cannot consider—or, rather, have not always considered—the geographical situation of their constituent undertakings from a regional point of view. Regional grouping is a very definite help to good marketing and sales planning, and is probably the first and necessary step towards what may be only an ideal, but an ideal for which we can well strive, a national marketing policy within the Industry.

This Association has, I know, spent a lot of time and effort in introducing the suggestion of regional marketing groups to its members, and I am glad to learn from Mr. Rowe that some success has attended his efforts. I do want to add my entreaties to his. I am confident that well-planned selling, which is the theme of Colonel Carr's Paper, becomes more and more necessary to this Industry every year, and I am confident that, short of a national policy, the regional marketing scheme is the first and vital step.

Our experience in the London group has been a happy one. We have had our troubles, and there are times when our individual policies prevent us from taking the fullest part in any particular marketing scheme, but we have learned one thing, and that is that the results we can achieve as a body can never be equalled by the total of the results that we can achieve individually. With this fact accepted, it is not difficult to devise ways and means of making the group planning flexible and yet of such a character that all members can participate in the general effort. The Gas Light and Coke Company have found that, for the same expenditure of money, they can achieve much better results as constituent members of the group than they can by themselves.

My publicity friends tell me, and indeed I know it to be true myself, that from their angle the same series of Press advertisements, the same posters, and if possible the same price appeal, produces results over an area which could never be equalled if five or six different types of Press advertisement, five or six different stories, were being used locally. The public travels a lot these days, and it is repetition of the same story and the same appeal which counts. I have purposely not said anything about group buying, as I realize that this is a controversial subject, but there is one angle from which I know the manufacturers would support my argument, and that is from the angle of standardization. It may well be that different parts of the country require slightly different modifications to appliances and slight deviations from the standard which was conceived by the manufacturer when he designed his appliance, but I am absolutely certain that there is no necessity for 150 types of oven door for one cooker. All these modifications and deviations from standard cost money, and it is ultimately the public that has to pay the piper. We are all trying to call a tune for cheaper gas, but in planned selling due regard has to be paid to the balance between capital cost and running cost.

Canvassing.

There is one point on which I rather join issue with Colonel Carr. His Paper gives me the impression that he does not have much time for canvassers except through maintenance and other fitters of the undertaking. I hold rather a different view. Maintenance fitters should be encouraged, as should all employees of the undertaking who are in contact with the public, whether they are collectors, meter readers, or fitters, to introduce prospects to the sales personnel. But I think we need to do more than that. Gas is invading rapidly the luxury field as well as the strict field of utility, and it is here that the opportunities are more easily recognized by a salesman canvasser than by other personnel employed by the undertaking.

The public are notoriously lazy in seeking out the place to purchase an article which they want, and it is for this reason that points of distribution for practically all well-known articles have multiplied enormously in recent years. Even the best equipped gas undertaking has within its own organization only a limited number of points at which it can show appliances and explain their uses to the public. Competitive industries, however, with big dealer organizations supplied direct from manufacturers, can keep their appliances before the public by means of a shop window in every street. It is the same old story of repetition. Let the public see the same piece of gas appliance prominently displayed wherever they go, and there is created a desire to own one. Co-operation with traders who serve the public on matters of domestic service is to my mind essential, and is not difficult to arrange. A new gas boiler for hot water has just been introduced, and during this season will be dis-

played in not less than 1,000 shop windows in London. I am confident that this display will be well worth while, and, backed up by the right sort of trader, will create a desire in the minds of the public which will bring results much more speedily than if it were displayed in the gas companies' windows only.

Canvassers, if properly controlled, also have a necessary function in planned selling. They are auxiliary man power; from a selling point of view they are not handicapped by having to render the service which is essential on the part of an inspector or salesman in charge of an area, and, further, they can be used seasonally to supplement the work of any particular campaign. Whether these canvassers should be part of the gas undertaking, or whether they should come from outside dealers' organizations, is a matter of choice. In London today, however, there are dealer organizations which are serving the Gas Industry well. The early difficulties of control have been evened out, and the constant support in selling that they are receiving is such that they are regarded with envious eyes by some of our competitive friends.

Colonel Carr says, in his Paper, that the two-part tariff is right and that it is logical that a person who buys more gas should get it more cheaply. The two-part tariff is not new. You have it in other industries in this country and it is adopted by gas undertakings in America. It is not a question of introducing a two-part tariff and facing an immediate loss of revenue. If you have a surplus in hand which can be applied towards the tariff, then you can make it appeal to a bigger section, and in that way assist in the development of new uses of gas. We have had refrigeration, and although it is unlikely that similar new uses will be developed suddenly, the two-part tariff provides a means of assisting to increase the existing market which is being supplied with gas. We have found in London that the two-part tariff, which with us is still in its experimental stage, is the best possible weapon that we can put into the hands of our service people to enable them to secure new consumers.

Complete Information.

Mr. F. C. BRIGGS (Chairman of the Special Services Sub-Committee of the B.C.G.A.): All those responsible for the management of gas undertakings will, I think, agree entirely with Colonel Carr's Paper in its general outline. He has indicated a broad principle, and at the same time has sketched as clearly as possible in the time available to him the more detailed steps which are necessary in his view to achieve the result desired.

I would confine my remarks to one particular point; but before doing so I would like to say that the pivot of the Paper seems to be Colonel Carr's statement that " The foregoing procedure presupposes complete information and consequent knowledge relative to sales opportunities without which definite and consistent results are impossible of achievement."

It would be very interesting to discuss the possibility of a *complete* record of sales opportunities and, more important still, of maintaining the accuracy of such a record, and the staff and staff work entailed. Colonel Carr says later: " Such an organization has been installed in the Stretford undertaking," but modestly he adds, " Results so far indicate great possibilities."

All managers responsible for the sale of gas must long to be in a position to press a button at the first sign of cold weather in the autumn and release a horde of keen, knowledgeable, and acceptable salesmen who will visit a list of possible consumers, of whom one has complete knowledge, every one of whom needs and is financially able to utilize a certain definite type of gas heating appliance. But, on the other hand, they perhaps do wisely in " hurrying cautiously " before building up a system which may overburden the undertaking. The middle course so often proves to be the wisest.

I do not say this by way of adverse criticism of Colonel Carr's Paper. Most certainly we should ponder his words with the utmost care and allow ourselves to be stimulated to the limit of caution by his enthusiasm; but if we do not go to the end of the journey with him, the limit our caution advises may be wisdom.

The stress which Colonel Carr places upon the correct order of precedence in these matters is entirely admirable. He says we are selling a service and that that service must be right before we endeavour to increase its sale, a right service, with all that that implies—correct composition of gas, correct pressure, and staff with proper technical knowledge. It might truly be said, in my view, that to attempt to increase sales before these things are right is to do harm. Of two non-users of gas, the one who has tried it and is dissatisfied is much the more difficult person to tackle.

The instilling of technical knowledge into suitable members of the staff is a comparatively easy matter—I say " comparatively " advisedly. The training for salesmanship is very much more difficult and debatable. Really capable salesmen of gas service—and by that I do not mean maintenance of appliances but, for example, space heating, cooking, water heating, carried out by gas—must have technical knowledge if they are to advise adequately, but they must have something else and must be something additional to technicians. It is very much easier to define what that something is than to decide how it is to be taught or obtained. In fact the Industry has, I think, no settled opinion in this matter and is looking to the Association for guidance. Some years ago the Association devised a scheme entitled " A Scheme for the Education and Training of Gas Salesmen." It was an ambitious scheme, offering several grades of certificates, but I venture to suggest that it was built on somewhat unstable foundations. It took within its scope the technical examinations of The Institution of Gas Engineers and contained the new subjects of Gas Sales Technology and the Economics of Gas Supply. I think it is fair criticism to say that as a scheme it has not been a success, but there remains the Correspondence Course in Domestic Gas Salesmanship, which is of considerable value. There are very divided opinions as to the exact results accruing from a study of the Course. It may be contended that salesmen are born and not made, that the Course is only common-sense and that a junior can, and in fact does, achieve a higher resultant certificate than an experienced salesman; but it is in fact *organized* common-sense and carefully directed thinking, and no salesman can possibly study the Course seriously without deriving benefit and help in his work. It remains as something of value from the Association's first attempt to solve this problem—and it is to be improved.

It is interesting to learn that 1,870 students have taken this Course and that 87 are now taking it.

I have the honour to be the Chairman of the Special Services Sub-Committee of the Association, which is charged with the task of dealing with the problem of training for salesmanship; and the Sub-Committee is calling to its aid a further Committee of some of the leading salesmen from all parts of the country. The first work that has been undertaken is the revision of the Domestic Gas Salesmanship Course. Part of this has been completed, and the Sub-Committee is now tackling the wider problem. The Association's officers were particularly anxious that some announcement of a new Course might be made at this Conference, and I take full responsibility for discouraging this because the matter has not yet progressed sufficiently far to allow the final result to be seen. I might be permitted, however, to indicate the line of thought being pursued.

It is felt that the Association is not the competent body to deal with technical education, this matter being far better left to the Institution, and, therefore, that no good purpose is served by the Association issuing a Certificate to indicate the holding of a Certificate already issued by the Institution. It is surely more logical for the manager to require the salesman to produce the Institution's Certificate of technical knowledge and the Association's Certificate of salesmanship knowledge. In point of fact, since the original scheme was launched only fifteen of the combined technical-commercial Certificates offered therein have been awarded.

The subject of Gas Sales Technology was replaced some time ago by an extension of the Domestic Gas Salesmanship Course. It will be suggested that the Economics of Gas Supply should also be deleted. Eighteen students only have taken examinations in this subject.

The present Domestic Gas Salesmanship Course is a correspondence course with a final written examination. It is necessary to strengthen this to avoid the awarding of Certificates to students who in practice are unable to apply their instruction. An oral actual selling test may be made an essential part of the Course.

The Higher Type of Salesmanship.

So much for the elementary principles of selling; but the Industry must look to the training of a higher type of personnel to extend the higher type of salesmanship advocated by Colonel Carr. For this purpose there may be devised a further course of instruction somewhat on the lines of the Domestic Gas Salesmanship Course dealing, for example, with marketing, the analysis of markets, and the proper use and arrangement of display in showrooms.

The Salesmen's Circles were a useful device for securing the interchange of ideas between salesmen. They were loosely organized, and experience seems to indicate that, while much benefit has accrued, they have scope for improvement. This matter needs sympathetic investigation. The Committee is contemplating the formation of smaller discussion groups organized by the Circles, but with constant direction from the Association.

Then there remains the problem of the large number of persons of all ranks employed by the Industry but not in the direct selling department, who in the bulk can exert a considerable influence among all the persons with whom they come into contact daily.

Here some attempt has been made by way of a series of lectures to gasfitters, dealing with the salesmanship aspect of their contact with consumers. They were not the success that was hoped, and will not be continued. A new line of investigation is being pursued. It is hoped eventually to offer an entirely new method which has promise of very wide usefulness. It may be possible to offer on loan a simple and comparatively inexpensive appliance which audibly, visibly, and in an interesting manner, devised by experts, will place before each section of our employees ways in which they can best in their own particular spheres increase the goodwill of the Company and in fact assist directly in the sale of gas service in its widest sense.

Mr. SAMUEL TAGG, J.P. (Past-President of The Institution of Gas Engineers): May I make a suggestion to the Special Services Sub-Committee? The National Gas Council appointed a Committee to deal with the question of standing charges. During the course of the last few years many undertakings have introduced varying methods of charging, and it appears to me that an examination of the results accruing from these variations in different parts of the country would be of the highest possible value if the information were placed at the disposal of the Executive Committee. Perhaps a small Committee might

be set up, consisting of people experienced in sales, to examine the results of the schemes which have been in operation sufficiently long to enable conclusions safely to be based upon them.

Mr. HAROLD WHITEHEAD: The time has come when planned selling in the Gas Industry is vital to its future success, because as the individual undertakings understand these principles of business administration and planned selling, so they will realize that each undertaking is merely a unit in a large enterprise.

Col. Carr Replies.

Colonel CARR, replying to the discussion, said: Mr. Lowman has suggested that there is a difference of opinion between himself and myself with regard to the desirability of grouping. I should like to assure him that there is none; but so far as holding companies are concerned, a sound policy must be adopted and only those companies grouped which can be successfully grouped. There may be some advantage to an isolated undertaking, which has been badly managed in the past, to be brought within the control of a holding company, but holding companies must follow the policy of sound grouping and the whole of the proceedings should be to plan with regard to future developments. Without such a policy you cannot hope to succeed, and such schemes must justify themselves by giving better service and cheaper gas. Mr. Lowman also referred to group marketing, and there again I agree with him that group marketing is going to offer great advantage. The B.C.G.A. is making history in the new gas fire campaign, in which we are to have one price, and one price only, and that is going to simplify matters considerably. It will enable us to do what is so essential, and that is to get for gas a proper appreciation by the public. It is desirable that in all gas sales and service the issue should be put forward with conviction and in the simplest possible manner so that it can be appreciated easily by those who have no knowledge of the economics of the position. If it is put forward as a simple issue and we have one price, then the group marketing scheme will be of great advantage in all publicity in bringing our case before the public. I hope that will not apply only to appliances. It is more important still that it should apply to gas charges, and that the less efficient units will be brought into line with the more efficient units throughout the country and more on to a level basis than is the case to-day. There is still far too much variation.

With regard to canvassers, Mr. Lowman rather suggested that I do not agree with the employment of canvassers. My point is that I do not agree with the employment of canvassers unless they are working to a definite plan. I do not agree with haphazard canvassing. I do not agree that it is a desirable thing for a gas undertaking to say that it will run a hot water campaign and to give the appliance manufacturer a free hand to run over the district with his own canvassers, without any definite plan or definite scheme. If that policy is adopted it is not inconceivable that those canvassers will sometimes make claims which cannot be justified, and although a number of orders may be obtained, the most serious damage might be done, in that quite a number of dissatisfied consumers may be created. It is only in those circumstances that I say I do not agree with canvassers. It is vitally important that the canvasser should be brought into a properly planned scheme, and I believe it can best be done by working in conjunction with the undertaking itself.

Another matter referred to by Mr. Lowman was that of two-part tariffs, and he said that these might possibly mean an immediate loss of revenue. Personally, I do not think that, as a general rule, the two-part tariff will mean a loss of revenue. I know one particular undertaking whose revenue had fallen at an average rate of £1,000 a year for the past five years, from a revenue of £30,000 a year, and in my opinion this loss will continue unless they adopt promotional tariffs. When I made my calculations for my first two-part tariff I thought I was going to lose several thousands of pounds a year to start with, but that did not prove to be so in practice and we did not actually suffer any loss of revenue.

I agree also with Mr. Lowman as to the desirability of co-operating with traders. The possibilities of co-operation with traders had been neglected by us for too long, and we cannot afford to lose any opportunity of selling through lack of co-operation with traders. This provides a very useful field to which we should give consideration. In that co-operation, however, I suggest that the traders must conform to our sales plan.

It was pointed out by Mr. Briggs that the procedure which I have suggested pre-supposed complete information. By "complete information" I mean information that is really complete. Unless you have your information as complete as it is possible to get it before you introduce any campaign you have started out on a losing battle. It is worth while spending time and money in getting the information correct, so that when we start we know we have a definite objective and we are able to assess the possibilities of attaining that objective.

I think Mr. Briggs will agree with me that selling cannot be said to be an exact science. It is, of course, a science which will give results that can be estimated, always provided it is carried out on reasonably exact lines. Certainly we cannot proceed on haphazard lines, and therefore, I do attach the greatest possible importance to our knowing everything about the people we are trying to get at. For example, it is of no use trying to sell a Rolls Royce car to a man earning £150 a year. Thus, it is a question of information, and we want that sort of information about every household in the areas with which we are concerned.

As to gas fires, there are enormous possibilities in every area; but you must plan your district, and having made your major plan, then your district salesmen and your canvassers must be made to fit in with it. It is necessary to have special plans almost for individual consumers; at all events, we must study the psychology of the consumer and must have knowledge of the economics of the particular household. That is an important point. You want to know what they are at present spending on coal, and also what you can offer as an alternative. This is an aspect which must be brought into the education of our salesmen. They must be taught how to estimate the economics of the household to which they are endeavouring to sell.

I do not agree that selling, while it is everybody's job in a gas undertaking, is anybody's job; that is a mistake. It must, of course, be somebody's job, but while we are all interested in sales and the whole of our staff must co-operate and work in with our sales organization, let us build up a personnel whose sole duty is sales. We cannot afford to neglect that aspect. We are not spending anything like the money we ought to spend on sales. We are not paying anything like what we shall have to pay if we are going to secure the personnel we require for our sales departments. In my view, any expenditure that we may incur on new plant will not repay us half as well as expenditure incurred in obtaining a really skilled and trained personnel on the sales side. That is the fundamental truth which I want to drive home at this meeting. I hear so often that undertakings cannot afford expenditure on sales staffs and departments, but we have got to afford it, and we have got to pay these staffs well, because theirs is a highly skilled job. If we build up a highly skilled personnel I know that we shall have such a measure of success that every one of us will be astonished. I know from industrial sales alone that the possibilities of business are almost immeasurable if this policy is carried out.

Vote of Thanks.

Sir FREDERICK J. WEST, C.B.E.: It gives me great pleasure to propose a very cordial vote of thanks to Colonel Carr for his Paper and also to those who have taken part in the discussion on it. The essence of success of any Paper depends on the suggestions and theories put forward by the Author, and I think the success of Colonel Carr's Paper lies in the fact that his suggestions and proposals have been put into practice in the undertaking which he advised so successfully for very many years, and they have also been successful and profitable to the undertaking which he now advises.

Mr. A. MACKAY (Stoke-on-Trent), seconding the vote, said: I find it absolutely essential to have canvassers, and, moreover, they must be well trained. We do not leave the canvassers, however, to work by themselves. Their work is carried on in conjunction with traders, and having in mind the competition from electricity, it is very necessary to have well-trained and well-paid canvassers. Since I introduced my new scheme I do not ask them what time they spend in any particular house. I do not question the number of meters they read each week, but I do go carefully through the reports which they present to me and notice the actual business they obtain.

Colonel CARR responded to the vote.

The B.C.G.A. Display Scheme

An example of the work of the B.C.G.A. display studio, to whose activities we referred in last week's issue. At the Annual Conference, Mr. W. R. Oliver, the Association's Display Officer, arranged a comprehensive exhibit showing the work the studio is able to undertake on behalf of the members of the Association. This interesting feature was the subject of much favourable comment.

* "Pots & Plans" a U Film —for Universal Exhibition

* New B.C.G.A. Kitchen Planning Film shown at Manchester Meeting and shortly to be released.

** "New Kitchens for Old" a U Brochure —for Universal Distribution by gas undertakings

U —for Unanimous appreciation by your consumers

U —for Unequalled Sales

YOU —will benefit

URGENT

DELAY MEANS £OSS
ACTION MEANS SA£ES

Every one of your Consumers wants the Ideal Kitchen—one that is easy to work in and good to look at. "New Kitchens for Old" sets out the principles of Kitchen planning and the importance of gas service in modern schemes. Order your supply NOW!!!

** **Send it to your mailing list of good prospects**
Distribute it at demonstrations
Present it to showroom visitors
Stage model kitchens in the showroom windows with the offer of free copies of NEW KITCHENS FOR OLD
Hand out copies to visitors at exhibitions
Offer it in your newspaper advertisements
Distribute it at lectures
Send it to members of women's societies and clubs

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THE B.C.G.A. CONFERENCE

Mrs. Eileen Murphy

Aspects of Gas Sales and Service in America

by

EILEEN MURPHY

(Home Service Director, British Commercial Gas Association)

The object of this report is not to present a complete picture of sales activities in the American Gas Industry, even if that were possible after a visit lasting in all less than two months. My aim is limited to illustrating certain aspects of sales development in America which may have a topical interest for members of the British Gas Industry.

I was privileged to collect material at first hand by accompanying workers on their daily jobs not only in gas offices, showrooms, and demonstration theatres, but also in the homes of consumers. My warm thanks are due to the officers of the American Gas Association and of the many companies I visited. They gave me every opportunity of collecting information for myself and forming my own opinions.

I. MEASURING MARKETS.

American gas men to-day are overhauling their sales methods in the light of experience gained during the years of depression. Until 1929 the most costly promotional methods were justified by the unparalleled prosperity of the country. Cost was then a secondary consideration in effecting sales. The depression changed all this. The fuel market became keenly competitive. To-day the American Gas Industry aims at selling more and more gas on a lower margin of profit. Every phase of selling is being subjected to critical scrutiny. Employee training, dealer co-operation, advertising, demonstrations, and home calls have all come under the microscope. The frills of selling have been ruthlessly cut out.

A great deal of consumer investigation is being carried out by individual companies to arrive at a basis for formulating new sales policies. Much importance is attached to market research. As the Americans say: "Research is trying to find out what you are going to do when you cannot keep on doing what you are doing now." This definition certainly applies to the present situation.

The following sections give examples of different types of sales survey which are being conducted at the present time.

A Sales-Prospect Survey.

Several companies have evolved a system by which the market for gas appliances is thoroughly surveyed by the salesmen themselves in the course of their ordinary work. Thus while the salesmen are uncovering sales prospects from a "cold" canvass, they are also helping to build up a directory of useful sales information.

The basis of the system is the Salesman Survey Card (see reproduction). Each salesman starts his day with ten Survey Cards on which addresses have been inserted. He turns in these cards as soon as they are completed and receives as many more cards as can be handled that day. The system regulates the amount of canvass and follow-up calls to keep the salesmen at a constant pace.

Every effort was made in this survey to boil down the amount of paper work required from the salesman. The most important item on the Survey Card is the classification of the customer as a prospect for various appliances. The classifications prescribed are as follows:

CLASS A.—1. Customer can afford the appliance.
2. Customer needs the appliance.
3. The salesman believes the customer will buy such an appliance within thirty days.

CLASS B.—1. Customer can afford the appliance.
2. Customer needs the appliance.
3. Salesman believes the customer will buy such an appliance within 31 to 90 days.

CLASS C.—1. Customer can afford the appliance.
2. Customer has no present need for the appliance.
3. Customer indicates interest in the appliance and is a possible purchaser over a longer term than indicated above.

CLASS D.—No prospect. Salesman must give definite reason for classifying customer as no prospect.

It is believed that this system will result in a larger and more constant volume of business, for the following reasons:

1. It ensures accurate market information.
2. It provides close supervision and easy direction of the salesman's daily activity.
3. It simplifies the co-ordination of advertising (especially direct mail) with sales effort.

What the Customer Thinks.

One gas company recently made known the results of an objective survey conducted in its district by impartial investigators. This survey sought to establish the attitude of mind of a representative number of customers towards the various competing fuels.

One deduction to be drawn from the investigation was that most householders were ignorant of the selling features of modern gas appliances. Comparatively few were alive to the differential advantages of gas appliances over their electrical counterparts. In America, as in Britain, the electrical industry has been dowered with a prestige which its performance does not substantiate, and there is no doubt that in the past the public has been irrationally receptive to electrical claims. It is to alter this attitude that the Gas Industry has started its campaign of national advertising.

Some results of the investigation are listed below to show its scope:

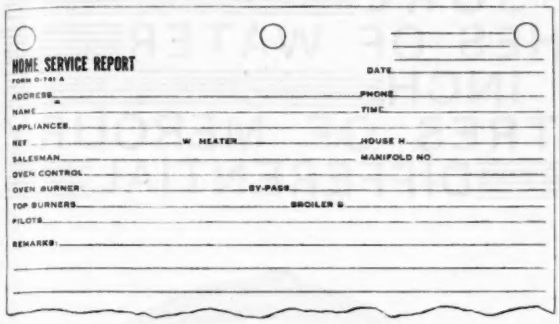
(1) *Cooking.*

Most of the people interviewed preferred gas cookers for speed, cooking results, and length of life, but they showed ignorance of other features like automatic control, coolness, cleanliness, &c., which they attributed to electric cookers. Large numbers admitted complete ignorance of various competitive points. Approximately 50% of the housewives used the oven three or less times

a week. Only 20% had ever seen a home service demonstration.

(2) *Water-heating.*

About 76% thought gas was best for water-heating; 70% claimed they had all the hot water they needed, and only 8% had modern automatic gas water heaters.


HOME SERVICE REPORT

DATE

ADDRESS PHONE

NAME TIME

APPLIANCES

RET W. HEATER HOUSE H.

SALESMAN MANIFOLD NO.

OVEN CONTROL

OVEN BURNER BY-PASS

TOP BURNERS BROILER B.

PILOTS

REMARKS:

Standard Report Card for Demonstrator testing a customer's cooker.

(3) *Refrigeration.*

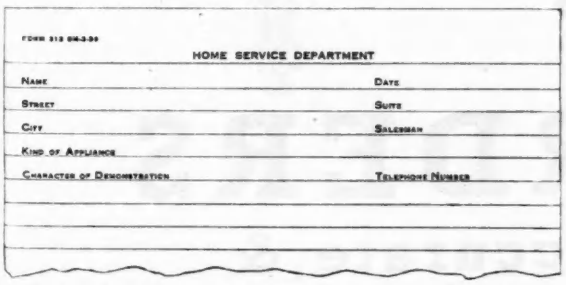
60% of the people questioned had ice-boxes, and the great majority knew nothing of the comparative merits of gas and electricity for refrigeration.

The company in whose area this survey took place has always been active in advertising and promotional work. The very fact that an outside agency was employed to make the survey shows that the company was open minded and anxious to face realities. The most disconcerting feature of the agency's findings was the ignorance of so many householders about the genuine advantages of modern gas appliances. There is reason to believe that the position in other parts of the country is not very different.

The conclusion drawn by the company was that there was need for far more showmanship, more advertising, more dealer outlets, and better rate structures. In particular, the president of the company urged that the findings of the survey were a strong argument for intensified educative advertising on a national scale, not only by the American Gas Association, but also by appliance manufacturers.

A Cooker Sale Survey.

Another company conducted a survey to find out exactly why women bought modern gas ranges. The buying motives of several hundred purchasers of cookers were gauged both by correspondence and by interviews with trained investigators, and then analysed as follows:


HOME SERVICE DEPARTMENT

NAME DATE

STREET SUITE

CITY SALESMAN

KIND OF APPLIANCE

CHARACTER OF DEMONSTRATION TELEPHONE NUMBER

Report Form for demonstration given by request in customer's home.

51·7% bought new ranges as a matter of immediate necessity—*e.g.*, the old range was no longer up to its job.

45·1% bought new ranges primarily because of their improved appearance. 60% of these women, however, spontaneously mentioned during interviews that they were surprised to find how much better the new range worked than the old.

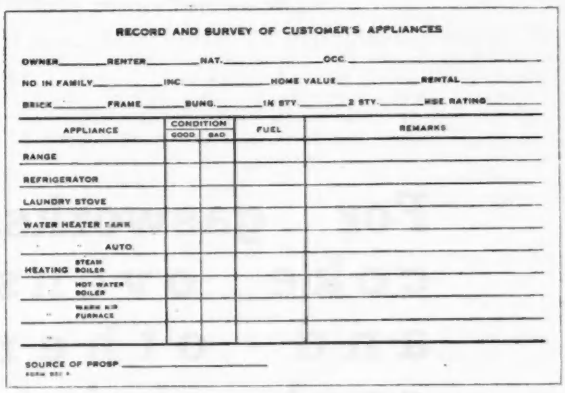
3·2% bought new ranges because they really understood why modern ranges cooked better.

In other words, gas ranges for many purchasers were in the same sales class as household furniture. Customers were apt to say: "Well, our old range is not so beautiful, but it still cooks, and there are other things we need and desire more than a new gas range." In other words, they felt that modern gas ranges offered nothing new but improved appearance.

As a result of their findings the company started an education campaign to drive home the better cooking service of modern gas ranges.

Home-Planning Survey.

In co-operation with national architectural and home magazines, another company set out to discover the house-planning and house-building preferences of the ordinary American family, and arranged to build three houses incorporating the ideas of the majority. In this way the company dramatically cashed in on the wave of house-building at present sweeping America after the lean years. The *American Home*—popular magazine—said: "To our knowledge, this is the first time any public utility has been willing to spend its money the way other people want it spent." The analysis of preferences showed that the American public, though otherwise surprisingly old-fashioned in its tastes, is solidly set on having automatic


RECORD AND SURVEY OF CUSTOMER'S APPLIANCES

OWNER RENTER NAT. OCC.

NO IN FAMILY INC HOME VALUE RENTAL

BRICK FRAME BUNG. IN STY. 2 STY. RSE. RATING

APPLIANCE	CONDITION GOOD	CONDITION BAD	FUEL	REMARKS
RANGE				
REFRIGERATOR				
LAUNDRY STOVE				
WATER HEATER TANK				
HEATING AUTO				
HEATING STEAM BOILER				
HEATING HOT WATER BOILER				
HEATING WARM AIR FURNACE				

SOURCE OF PROSP

Each Salesman begins his day with ten of these Survey Cards, which run the tape over the consumer very thoroughly.

equipment. The order of preference for various household fittings was as follows:

1. Automatic water-heater.
2. Automatic refrigerator.
3. Oven heat-controlled stove.
4. Kitchen ventilating fan.
5. Bathroom heater.

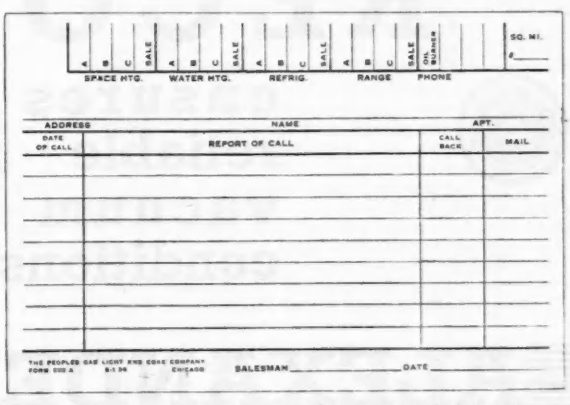
As for heating generally, 50% said they must have thermostatic control, and 65% said they would like air conditioning.

This survey was, of course, chiefly a picturesque merchandizing scheme, but the sound plan of making the public co-operate to the full had two distinct advantages for the utility company—first, it roused an immense amount of interest and enthusiasm for the scheme; secondly, it gave the company valuable pointers for shaping its sales policy in the housing boom.

2. HOME SERVICE.

From Teaching to Selling.

Home Service was started in America many years ago, when cooking by gas was becoming almost universal within


A B C SALE — SPACE HTG.

A B C SALE — WATER HTG.

A B C SALE — REFRIG.

A B C SALE — RANGE

SALE — OIL BURNER — PHONE

SQ. MI.

ADDRESS NAME APT.

DATE OF CALL	REPORT OF CALL	CALL BACK	MAIL

THE PEOPLES GAS LIGHT AND COKE COMPANY CHICAGO

SALESMAN DATE

This is the business side of the card—the estimate of sales prospects.

areas of gas supply. Its object was to popularize home cookery of every sort, and thus to sustain the use of gas in face of the inroads of manufactured foods and canned goods. "Teach, but do not sell" was the rule

VACUUM
PRESSURE
VACUUM & PRESSURE
INCHES OF WATER
POUNDS PER SQUARE INCH
MILLIMETRES OF MERCURY
MILLIATS
DIFFERENTIAL

For gasworks, coke ovens and other carbonizing processes—

through each and every stage of gas production and supply—

the use of

"DEAD BEAT" RECORDERS

ensures accurate & reliable recording of vacuum & pressure conditions.

ALEXANDER WRIGHT & CO LTD
WESTMINSTER · S·W·1

laid down for Home Service workers. In consequence the first Home Service workers were trained teachers with little personal knowledge of the commercial side of the Industry's work, and they established an academic tradition which is no longer applicable in modern conditions. Force of circumstances has obliged sales managers to revise the principles of Home Service operation. The depression made them scrutinize every promotional activity to make sure that they were getting value for money. No luxury overheads could be carried. The impact of electrical range competition, at first under-rated, led them to realize that demonstrations could no longer be regarded as mere cooking lessons, but must be planned to expound the marginal advantages of gas as against electric cookers. All sorts of outside firms, including food manufacturers, appliance makers, meat packers, &c., began to use domestic science experts who were trained from the sales point of view and were made to realize that their jobs depended on quick tangible results.

Thus the American tendency to-day is to yoke Home Service with other sales activities, to reduce activities like the wholesale testing of recipes, and to inject colour and showmanship into demonstrations by developing a picturesque sales-slanted technique in place of methods which were better suited to the domestic science classroom than to a commercial concern selling its wares in the teeth of ruthless competition.

The collection of big audiences at demonstrations is no longer regarded as an end in itself, since it was found that so many of those who attended were regular visitors; the chief aim to-day is to attract as many newcomers as possible and so to extend the effect of demonstrations as widely as possible. Mere figures of attendance are no longer considered to be of vital importance; it is the proportion of sales prospects that counts.

Competitive Demonstrating.

Keener electric competition has increased the need for sales-conscious demonstrations of gas cookery. For instance, the electricians have sought to minimize the disadvantages of their sluggish boiling plates by popularizing the so-called "waterless" method of hotplate cooking, by which only half a cupful of water is needed for cooking most vegetables. The "waterless" method is economical both of time and money, and if the customer can also be persuaded that it is healthier than other methods ("waterless" cooking is supposed to preserve natural oils and minerals in the vegetables) she is likely to become a prospect for an electric cooker. Such selling points as these depend on effective demonstration, and they can only be countered by gas demonstrators who know the competitor's case as well as their own. This is only one example of the way in which demonstrations are being used to enforce sales arguments.

Child Showman.

Here is an example of American showmanship injected into gas demonstrations. A gas company, planning a cooking carnival, wanted to show the simplicity of automatic gas cooking. They hit on the phrase, "Even a child can cook like a chef—on the modern 1937 gas ranges." Then they set out to prove that the phrase was literally true, and not merely the trite boast of a hack copywriter. Throughout the cooking carnival a little girl of six gave professional demonstrations of new recipes before huge audiences. The little girl was called Barbara Jenkins, and during the carnival she became an inescapable feature of Chicago life, challenging the popularity of the other infant prodigies, like Master Freddie Bartholomew and Master Rooney, who have made the United States a land fit for children to live in. Pick up any Chicago newspaper, and you were sure to be confronted by the smiling and confident face of Barbara Jenkins, inviting her admirers to see her cook like a chef. This is merely one instance of the dominant trend towards dramatizing demonstrations; it is not suggested that the same methods would necessarily be successful elsewhere.

Home Service Personnel.

All Home Service recruits are required to have had a college training in "Home Economics" lasting from two to four years. This is not an exacting demand, especially when it is remembered that the proportion of young Americans who pass through college is relatively higher than in other countries. Thus, though a domestic science diploma is indispensable, it is by no means the most important qualification for a good post. Where academic distinctions are as common as blackberries, commercial acumen, social gifts, and "personality" are the chief assets which the employer looks for in a recruit. A really good domestic science expert has a wide choice of jobs, not confined to the gas and electric industries. In fact, there is a powerful association of "Home Economics Women in Business." All the members have college degrees, and the directory shows that they are employed in advertising agencies, department stores, household equipment firms, insurance companies, food companies, hotels, magazines, radio stations, restaurants, and textile firms. Thus a domestic science training offers a career open to talents, and a girl who combines sales sense with a knack for interesting demonstration can command a good job and knows her own value. These are the sort of employees the gas companies look for, and some of them flatly refuse to take any girl straight from college. They attach added value to a woman who has rubbed off the raw edges, learned something of selling, and acquired the characteristics of a good mixer in the rough and tumble of ordinary business life.

Planning Home Service Work.

The system on which the Home Service worker's day is planned varies a great deal from one company to another. In one well-integrated group of small undertakings the Home Service girls are employed almost entirely on home calls. Demonstrations at these towns are given only twice a year, but they are "put over in a big way." That is to say, they are organized in conjunction with the local newspapers and with the support of manufacturers of branded foodstuffs; they are advertised on a big scale and attract big audiences, and the records invariably show a spectacular jump in sales of appliances.

In the larger companies there is a tendency towards specialization. Thus a company employing 16 trained girls allocated their functions in the following way: Seven girls spend their whole time on home calls; five are full time public demonstrators; and the remaining four attend to other aspects of the job, such as the answering of enquiries and kitchen planning.

In another large company demonstrations are given only once a week and home calls are made only in case of request or complaint. Here the chief job of the Home Service worker is house-to-house calling with the avowed object of turning in sales leads to the dealers.

Kitchen Planning for Sales.

The vogue of kitchen planning in America is due largely to the women's magazines which, in the absence of national newspapers, are probably far more influential than their British counterparts. The magazine editors grasped two facts—first, that newly-invented household appliances had made possible a revolutionary change in domestic work; and secondly, that most of the houses in America, having been designed for equipment that had become obsolete, were themselves out-of-date. The editors, therefore, set out to build a theory of kitchen planning which would encourage women to adopt new appliances by showing them how these appliances could be accommodated and used to the best advantage even in obsolescent houses. The idea was popularized by means of articles, coloured supplements, and elaborate competitions. It was eagerly supported by the manufacturers of household equipment, who saw in the kitchen planning movement a means of marketing their appliances, and who welcomed the scheme all the more heartily because the re-housing drive started comparatively late in America and the outlets for new equipment were, therefore, restricted.

The American gas companies were among the first to develop the idea of kitchen planning and kitchen modernization as an effective background for the sale of appliances. In some showrooms a whole chain of completely finished kitchens has been built. Each customer can see a model gas kitchen which corresponds in size to her own kitchen at home and can have free advice not only on the choice and placing of gas appliances but on the purchase of such accessories as cabinets, flooring materials, paint, curtains, &c., and on suitable colour schemes.

A model kitchen is built on most gas demonstration platforms, and the demonstrator in the course of her work points out the advantages of having the refrigerator, range, and water heater at strategic points so as to reduce work, stretching, and walking. In this and other ways the public is taught to associate home modernization with the use of new gas appliances.

For customers who want advice on re-planning their kitchens, the companies keep small-scale wooden models made in sections so that an exact reproduction of the customer's own kitchen can be built in a few minutes and equipped with model appliances. The whole set of models can be folded and packed in a brief-case for demonstrating in the customer's home.

In many cases architects and builders come to the gas companies for assistance on kitchen design, and blue prints and coloured perspectives are drawn up for them. Some

REX

Following their use at Gas Industry House, Potterton's Patent "REX" GAS-FIRED HEATERS have been installed with Low-Pressure Hot-Water Apparatus for warming the Temporary Headquarters of The Gas Light & Coke Company at Westminster, of which an exterior view is here shown.

Temperatures are regulated by Remote Control Thermostats in conjunction with the standard Thermostats supplied with the Heaters.

The Buildings cover an area of 38,472 square feet and contain 384,720 cubic feet space, for which the Installation is divided into four sections of Accelerated Low-Pressure Apparatus.

General View of the Offices at Vincent Street, Westminster.

We are the sole inventors, patentees and manufacturers of **"REX,"** **"EMPIRE,"** **"EMPEROR,"** *and* **"VICTOR"** *Gas - Fired Boilers, together with all heaters of these designs marketed by agents.*

THOMAS POTTERTON (Heating Engineers), LTD.

RAVENSWOOD ROAD, BALHAM, LONDON, S.W. 12.

Telephone : **Balham 1244-5-6.**

Telegrams : **Potterton, Toot, London.**

companies in rapidly-growing districts retain women architects with gas experience for this job.

The American Gas Association has worked out a complete manual on the theory and practice of kitchen modernization. This was intended originally only for the use of gas officials, but it has proved so popular with architects and builders that a large second edition has been published.

The successful use of kitchen modernization as a means of making appliance sales has led several companies to advocate "basement modernization" with the object of selling central heating sets. Large numbers of American houses have basements which are little used because of the ugliness and dirt of the old-fashioned furnaces installed there. The gas companies have shown that, by the substitution of an automatic gas central heating plant in place of the old furnace, the basement can be put to good use as a playroom, billiard room, or workshop. Here again the companies have had to sell an idea before the sale of the appliance became practical politics, and this imaginative approach has been very successful.

3. DIRECT SALES.

Employee Sales.

Generous commission is paid not only to salesmen but also to any employees who turn in prospects which materialize in sales. In certain cases the salesmen's earnings are increased by a bonus calculated on increased load.

It is a common practice for Home Service workers to give sales-slanted demonstrations of gas appliances to all salesmen. This is also done by demonstrators employed by manufacturers. The manufacturers also issue elaborately illustrated sales manuals for the use of salesmen. Each page represents a stage in the process of selling.

There has been a successful attempt to make every employee sales-conscious and commission-conscious. Typists, cashiers, meter-readers, porters, even truck-drivers, are taught how to discover sales-leads and turn them in. Special films have been made which show in dramatic detail the technique of prospect-hunting among friends and acquaintances. These have been found extremely effective.

In addition, booklets are issued which point out that every employee has it in his own power to increase his earnings by finding fresh prospects. The lure of increased earnings is subtly presented in "real life" stories about the home life of various employees. The conclusion of one booklet is worth quoting because it shows a point of view which the gas companies are making popular. The hero of the booklet—a clerk—is supposed to be speaking:

"I always thought of a sales organization as composed of men who overpowered you into accepting what they had to sell. They charge their prospects, whom they consider their enemies, and they engage in battle. But finally, they find themselves surrounded with barriers of enmity, distrust, and apprehension.

"I have discovered that real selling is just the opposite of all this. It is getting acquainted with folks—it is telling them what you *know* about something with which they are not so well acquainted. It is a pleasant exchange of ideas—a recognition of confidence between friendly people."

There sounds the passing-bell of high-pressure selling. Employees are encouraged to think of themselves as buying-consultants to the customers. They are put in the right frame of mind for discovering prospects.

This policy has been a success. One company reported that during a period of nine months 43% of all the domestic business closed came as a direct result of leads turned in by employees other than salesmen. During this time such sales average $47·36, or nearly £10 per employee.

Employees who come in constant contact with the public are carefully trained. This applies with special force to telephone operators, and some companies issue manuals giving model dialogues between customer and operator on all questions that are likely to rise. So much business is transacted by telephone that the operator "must know all the answers."

Dealer Co-operation.

In all, 20,000 dealers hook-up with gas sales departments in the United States. They are responsible for the following proportions of total appliances sold:

	%
Ranges	60
Refrigerators	40
Water-heaters	50
Space-heaters	50
Central heating	20

As the result of deliberate policy, more and more business is being handled by dealers. It is generally felt that every dealer who profits by co-operating in the sales of gas appliances is a new source of strength to the Gas Industry. The more people who have a personal interest in the Gas Industry's success, the better for all concerned.

Contests.

Sales contests are frequently used to stimulate dealers' interest and to guide their energies. Gas companies are solidly in favour of sales contests for both salesmen and dealers. A well-known gas man who controls a number of companies said that all the contests he had run had been successful. Another said that the contests must be run over long periods so that enthusiasm could be worked up from the first stages of interest and amusement to a crashing climax with all the contestants working at full pressure. An essential feature of the contests is an atmosphere of "make-believe." Thus in the "Old Stove Round-up" the participants assumed the characters of cowboys and were addressed in the idiom of the prairie. In the famous "Nudist Contest" it was assumed that the competitors began the race stark naked, and each appliance sale represented the acquisition of a much needed garment; it is worth noting that most of the participants finished the contest fully dressed and in their right minds.

A recent contest for dealers ran from March 15 to July 15. It was called the "Home Run Contest," and was modelled on a baseball league. The weekly reports were couched in the language of the sports writer, and an example is given here:

"J. N. Smith is still pitcher in our league—his fast ball and his hook are still working smoothly—George Harrington has certainly put on a spurt and lacks two points to replace Smithy as starting pitcher—take off your warm-up jacket, George, and really go to town!

"There just wasn't room enough to leave F. Heckel and J. V. Pieper in the starting line-up this week—but we have them in the 'bull-pen' tossing 'em back and forth, champing at the bit and just waiting for a couple of the other boys to show a little fatigue so they can hop to it and get in the game."

At first sight the element of fantasy in these contests seems too exaggerated to engage the serious attention of dealers, but it has been proved in practice that the more imaginative and thorough the organizers are, the better the results. At the beginning of the contest each dealer was given a book with the rules of the contest and a list of points to be given for each sale, in the following order:

	Points.
Water-heater—conversion type	2
Water-heater—automatic storage	4
Electrolux refrigerator	4
House heating conversion burner	10
House heating gas designed boiler or furnace	20

By evaluating the various appliances in this way the company is able to use the contest as a means of directing energy towards the sale of those appliances which give most help in building up the gas load. The contest thus acts as a corrective influence on dealers who might otherwise take the line of least resistance.

The booklet contains also a complete catalogue of the prizes offered in the contest, with the number of points necessary to win each prize. The prizes are of all kinds, but it is noteworthy that a heavy proportion are suitable for women—such as rings, diamond wrist watches, toilet sets, coffee sets, &c. A tenable assumption is that the acquisitive instinct of wives and sweethearts may act as a useful spur to the energies of contestants.

National Contests.

National sales contests, affecting both salesmen and dealers, are organized with impressive thoroughness. They are sponsored jointly by the commercial section of the American Gas Association and the combined appliance manufacturers. Last year a water heater contest helped to increase sales by 55% over 1935. This year's contest is called the "Golden Faucet Contest" (faucet=tap). More than £3,000 was offered in prizes for salesmen. Sales plans were built up from the experience of successful competitors in previous years. A hot water booklet, leaflets, electros for use on the backs of gas bills, "mats" of newspaper advertisements, competitive test sheets for the use of salesmen, posters, window displays, and novelties were offered at cheap rates to participating companies. Monthly prizes were given and a monthly bulletin sent to salesmen gave reports of winners to date, with details of their sales methods. Medals of merit were offered in addition to cash prizes, and inter-company rivalry was encouraged by the award of plaques to companies having

the best records. In this way the contest is used as a means of large-scale merchandizing.

4. ADVERTISING.

National Advertising.

National gas advertising in America is only a year or two old, the annual appropriation being about £100,000. Owing to the size of the country, there is no national newspaper Press covering the whole country; in this respect the British advertiser is more favourably placed than his American counterpart. The decision to undertake national advertising is, therefore, all the more significant.

Most of the advertisements of the American Gas Association are inserted in magazines like the *Saturday Evening Post, Good Housekeeping, Home Beautiful,* &c. One advantage of this is that full colour can be used, which means that gas appliances can be illustrated in the most attractive settings.

An interesting feature of American national advertising is the provision for co-operation with both manufacturers and dealers. In many cases the appliance manufacturers have arranged to tie-in their national advertisements with those of the American Gas Association, thus presenting an impressive united front. Other large advertisers, such as food canners and manufacturers of floor coverings, have co-operated by showing modern gas ranges in their advertisements. The Gas Industry has also done a good job of public relations by persuading Hollywood producers to show gas appliances on domestic sets.

Co-operating dealers are encouraged to tie up with the national campaign in their local advertising. In the aggregate these dealers buy a great deal of newspaper space and their enthusiastic support is regarded as vital to the success of the scheme.

Radio.

For several months the American Gas Association has been running a radio programme on the National Broadcasting Company's network. Participating gas companies subscribe to the programme at the rate of 4 cents per meter. The broadcasts are dramatized by the introduction of the "Mystery Chef," who gives lively talks on cookery and offers a recipe book to those who call at the gas showrooms or write for it. This recipe book is excellently produced, and the cost of it is included in the gas companies' subscription. In the nature of the case, this scheme cannot be regarded as a test of radio advertising as a medium for direct sales; but the results so far recorded are a fair index of the power of radio for pulling enquiries and rousing interest. Except in the districts where radio reception from the N.B.C. system is poor, the reports from participating companies are very encouraging. American listeners have a very wide choice of programmes, and it is, therefore, a tribute to the "Mystery Chef's" technique that in several districts from 30 to 50% of consumers have listened to the talks. In some cases the demand for the recipe books as a result of the broadcasts has reached 10% of the total number of consumers.

It should be perhaps be added that in America, unlike Britain, there is no Press embargo on newspaper advertisements of radio programmes, and that many companies advertised the "Mystery Chef's" radio appearances in their local newspapers.

Local Advertising.

Gas companies' local advertising has several features of interest. The average spent on advertising is 1½% of revenue. In some districts testimonials are lavishly and effectively used in Press advertisements. The same principle is followed out in promotional booklets on particular appliances. For instance, a booklet on gas heating will carry pictures and descriptions of actual installations in the district, with details of the problem presented and the gas bills paid by each householder. The reader can see exactly the different type of house where gas heating is used and can read the experience of families like his own. This is the next best thing to getting a recommendation from a friend. Satisfied customers are doing the selling for the company.

Several companies issue tiny monthly newspapers to their customers, giving news of gas activities, demonstrations, and special offers and humanizing the company. These miniature journals are cheap to produce, and since they contain useful household tips are thoroughly read by women customers. The value of having an editorial appearance as opposed to a straight advertising presentation has been proved in practice. One of these little papers carried a careful display advertisement offering copies of a new booklet. The response was only moderate. The next month a similar offer was inserted in the editorial columns, and the response kept the telephone operators and showroom attendants busy. Another advantage of the newspapers is that they give the company an opportunity of personalizing the staff—for instance, the Home Service workers may write signed personal articles in them.

An impartial investigation in one district produced some interesting commentaries on the effects of advertising. 56% of those questioned did not know of the company's radio programme, and 20% did not like it. 48% had not noticed the company's advertising. But 53% said they liked the monthly news-sheet sent out by the gas company.

CONCLUSION.

The British Gas Industry does well to keep abreast of American developments. The international exchange of habits, standards, and fashions is a factor of increasing importance in the modern world. British trades in which the Gas Industry has a vital interest are keeping a watchful eye on American trends. For instance, while I was in New York I found that representatives of large British catering firms were visiting the most famous kitchens of New York and other cities on the look-out for useful tips. In one respect at least they found that British experience tallied with American practice, because the best known kitchens in New York use gas for cooking. I know, because I saw some of them for myself.

Other British firms, such as domestic appliance makers, canners, and food manufacturers keep a close watch on the American domestic market, which they regard as a huge experimental laboratory providing tips for their own businesses. In addition, the links between American and British firms in the same lines of business become steadily stronger.

American standards of living are still the highest in the world, and as a result new ideas of comfort and material well-being are given freer play in America than elsewhere. The American Gas Industry has been quick to sense changes in public taste and to contribute to their development. It has had the lion's share in satisfying the national passion for hot water. It has taken a leading part in meeting new needs, like automatic cooking, automatic refrigeration (now more than ever important with the development of frozen vegetables), automatic central heating and air conditioning. Its aim has been, and is, to keep gas in the fashion, and it has been successful, in spite of economic difficulties, political challenges, and rapid fluctuations in public taste.

These facts are important for our own Industry, because American tastes and ideas are apt to influence British thought and habit, just as American words are apt to invade the English language. From that point of view the whole transatlantic scene is worthy of close study by the British Gas Industry.

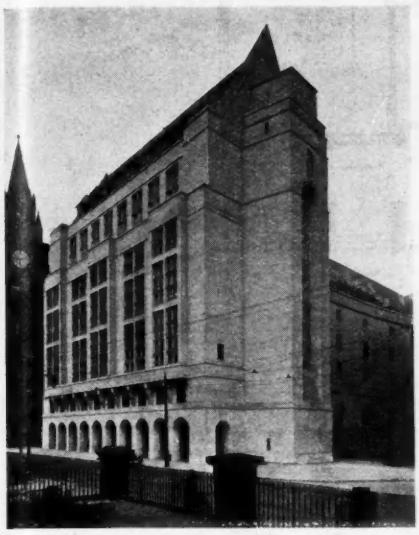
B.C.G.A. Conference—*Continued from page 64*

A feature of the docks' arrangements is the rail connection between every ship's berth and the mainline systems. The Ship Canal Company, a statutory undertaking with a capital to-day of over £20 millions, is also a railway company operating over 200 track miles of railway. Over 70 locomotives and 2,500 railway wagons are available for local haulage. The Company owns also the Bridgewater Canals. The Port of Manchester is the nearest point of shipment and discharge for an area covering the central mass of British industry. This area, extending as far south as Coventry, embraces the cotton textile industry, coal, chemicals, and engineering, and the diverse industries of Lancashire, the West Yorkshire woollen towns, the metallurgical centres of Sheffield and Chesterfield, and such important manufacturing centres as Shrewsbury, Derby, Nottingham, Leicester, Birmingham, the Black Country, and the Potteries. The population of this territory exceeds 10½ millions.

The Conference party was taken a distance down the Canal in two steamers, returning by motor 'bus to the Midland Hotel, where tea was taken at the invitation of the Ship Canal Company and Sir Frederick West. A vote of thanks was proposed by Mr. H. C. Smith, President of the Institution, and, after Sir Frederick had acknowledged it, the proceedings terminated, as everybody would have wished they might, with a few words of farewell by the Lord Mayor.

And so ended the twenty-sixth Annual Conference of the B.C.G.A.—by general agreement one of the most enjoyable and profitable of the whole series.

Manchester's New Gas Showrooms



Exterior View of the New Showrooms.

The following is a description of the very fine new Showrooms recently opened by the Manchester Corporation Gas Department and inspected with great interest by delegates to the B.C.G.A. Conference held in that City last week.

The planning of Manchester's new gas showrooms may best be explained by Mr. E. Vincent Harris's own description:

"The showrooms of the City of Manchester Gas Department occupy the principal floors of the Mount Street wing of the Town Hall Extension. This provides a commanding position with 11 large semi-circular windows facing Albert Square, Mount Street, and Lloyd Street.

"The longest side of the showroom has the additional advantage of being flanked by a stone vaulted arcade which supports the great bays of the Council Chamber above. This arcaded colonnade, as can readily be imagined, will be much appreciated by the citizens as a shelter during inclement weather and incidentally may through the window displays afford a pleasing way of passing the time, or they may be tempted to step inside the showroom and view the many interesting exhibits at their leisure. This arcade is brilliantly lit by 10 suspended gas-operated lanterns specially designed for the positions.

"It may also be pointed out that owing to the position of the great Rates Hall, persons in passing to it have an uninterrupted view of the extensive display in the gas showrooms. The floor piers supporting the vaulting, and the walls, are lined with marble in a soft honey colour. On these piers and extending across the full width of the ground floor showroom are a series of barrelled vaults which form an unique architectural feature. Each ceiling panel is decorated with cartoons suggesting the uses of gas in the daily life of the citizens. The titles of these panels are written on the walls adjoining, and the following two may be taken as typical examples:

Title.	Cartoon.
"Working" ...	Geyser, Gas Cooker, Anvil, Anchor Crankshaft, Rivets, Bowl Fire, Gas Fire.
"Tea Time"...	Plaice, Pork, Ray (Skate), Duck, Lobster, Cooking a Goose, Pudding, Rabbit, Conger-eel, Chicken, Pickling Cabbage.

"On each spandrel between the arches is drawn the popular figure of 'Mr. Therm.'

"Two low walls, which are covered with polished black glass and chromium, run the full length of the room. Against these walls the most modern types of gas fires in specially designed settings are housed on one side and on the opposite wall there is a comprehensive display of cookers, refrigerators, and drying cabinets which can be operated and ventilated by forced extraction along concealed flues within the walls themselves. By this method the greatest number of exhibits may be seen in operation. In addition, the coping of the low walls provides extra space for display purposes.

"The lower Exhibition Halls, which are completely below the street level, consist of two sections:

1. The Display Room with walls and floor of marble is provided with a metal suspended ceiling decorated in colour.
2. The Lecture Room has a tiered auditorium with floor entirely carpeted, and is equipped with demonstration stage and film projection equipment."

Showroom Layout.

Within the limits of the space available an attempt has been made to preserve a broad open aspect wherein visitors may wander round at leisure and in comfort, and yet at various selected points appliances in appropriate and isolated settings are so arranged that if one is interested in cooking, attention need not be distracted by a view of a miscellaneous collection of apparatus other than a cooker. Also, the intention is that the showroom shall function mainly as a permanent exhibition hall and enquiry bureau open to all citizens interested in efficiency, comfort, and convenience in the home and industry.

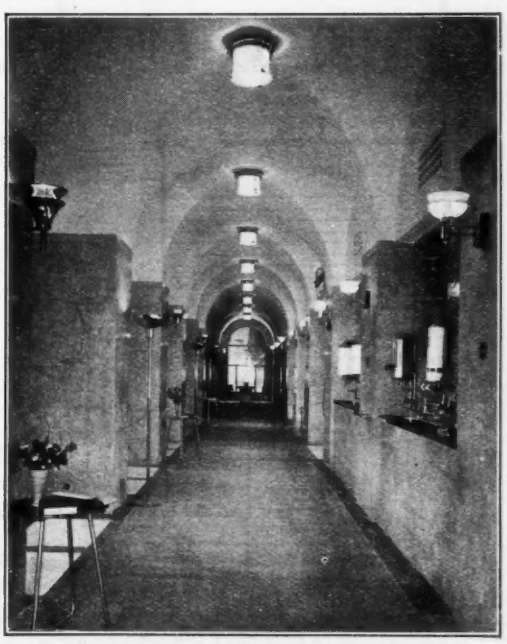
To follow the accompanying details reference may be made to the ground plans.

The ceiling of the Mount Street entrance hall is illuminated by four 3 ft. diameter flush fitting ceiling ventilating lamps of 900 candle-power each, specially designed for the positions they occupy, and may be regarded as something unique in illumination by gas. A further 16 ventilating lamps of 650 candle power, which serve as a decorative feature and form part of the ventilating scheme, are spaced on the panels of the showroom ceiling.

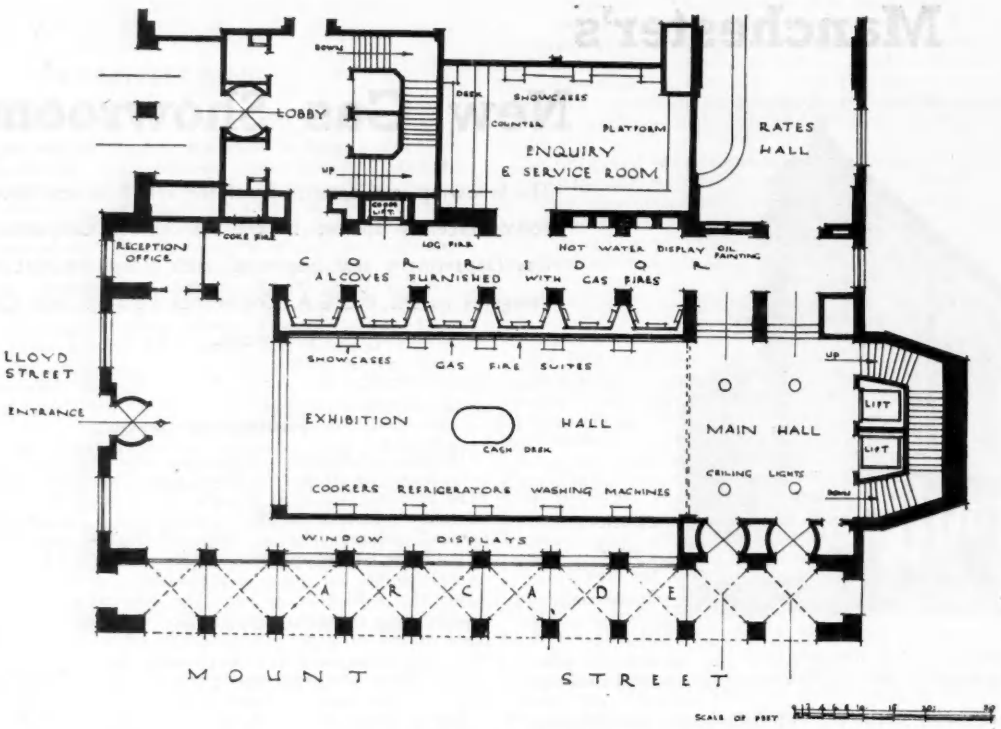
On each of the long sides of the showroom two low walls have been divided vertically by 10 showcases to form six bays into which on the window side, with appropriate backgrounds, a collection of cookers, refrigerators, and laundering apparatus is housed. On the reverse or corridor side six model suites of gas fires are shown.

Mention here may also be made of the beacon-shaped gas lamps surmounting each showcase and newels and the indirect lighting cup-shaped gas brackets on the spandrels of the arches. A cash desk in the centre and reception tables at each end of the room provide the basis for business operations.

On the higher level or Lloyd Street entrance a shadow-proof window is provided on each side. In addition, 10 ordinary windows may be used for window displays. Six



A Pleasing *Vista* in the Showroom.



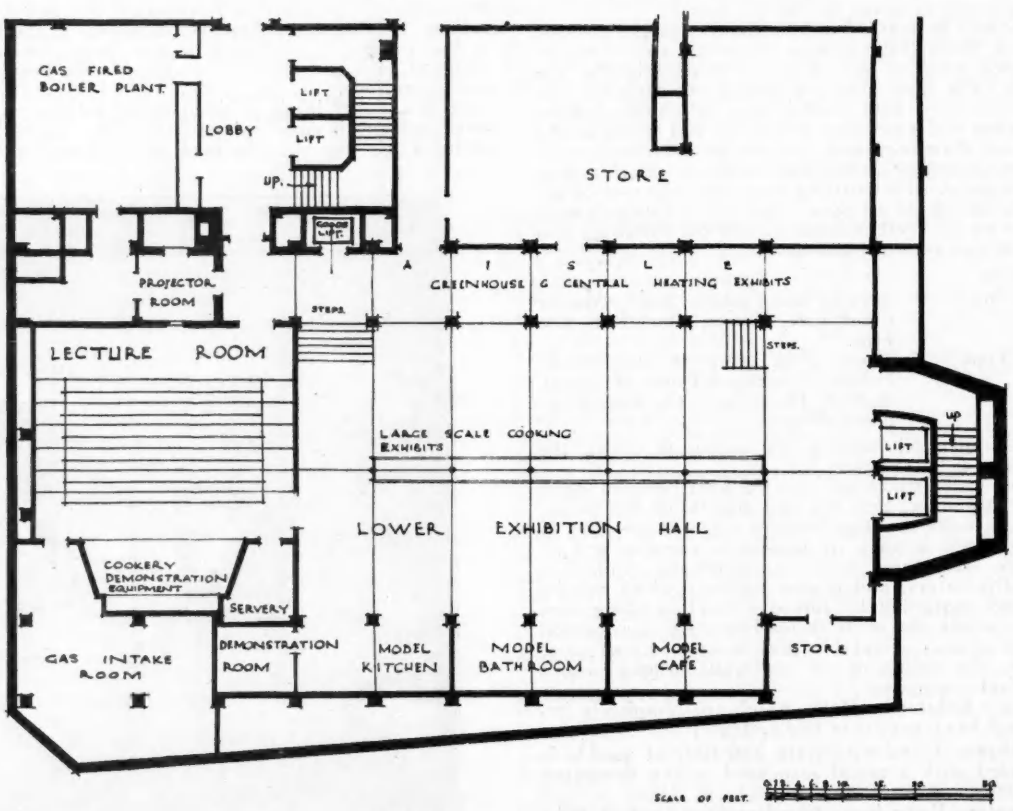
Plan of Ground Floor.

of these windows are provided with interchangeable colour strip gas lighting units at window floor level. These fittings are provided with automatic time control.

A reception office for confidential consultations is provided on this level.

Between the columns and backing on to the lower level are housed 18 gas fires of various designs and surrounds. Any of these gas fires may be operated and are ventilated by forced extraction through descending flues built in the small wall. A feature of the design of this layout is the ease and reasonable cost of interchangeability of any of the settings or gas fires. The top surface of this display is covered with black armoured glass, providing accommodation for a collection of miscellaneous and portable fitments.

In the marble panels on the opposite wall a gas-coke and log fire in marble surrounds and glass mantles are worthy



Plan of Lower Ground Floor.

The Demonstration Room.

of mention. Also a display of hot water apparatus representative of the multi-point, single-point, circulating and storage systems and various patterns of sink heaters, all in operation, may be noted.

Adjacent to the above and occupying the whole of a recessed panel 12 ft. by 8 ft. is a symbolical picture in oils with the title "Progress," by Mr. A. Sherwood Edwards.

At this point attention is drawn to the view along the length of the corridor ceiling showing the soft glareless lighting effects from a ventilating lamp in the apex of each vault, assisted by the vertical illumination from the brackets and floor standards.

Leading from the corridor is the service and enquiry room. Here the ordinary and more routine business will be carried out in addition to the sales of lighting fittings. For this purpose showcases, tables, racks, and panels have been provided for a display of gas lighting fittings.

Lower Level Showroom.

Descending by the passenger lift or staircase from the Mount Street entrance hall a full view is obtained of the spaciousness and the sunken effect of the centre section. On the higher level or aisle is a collection of central heating, greenhouse, garage, and flue block exhibits. At the end of the aisle and through a door on the right is a chamber housing the boiler plant, consisting of two No. 4B Bonecourt gas-fired boilers and calorifier of 500 gallons capacity. This plant provides hot water for the whole of the building and is capable of delivering 1,000 gallons of water per hour, raised from 50° to 140° F. The plant is intended to be a feature of the gas showroom exhibits.

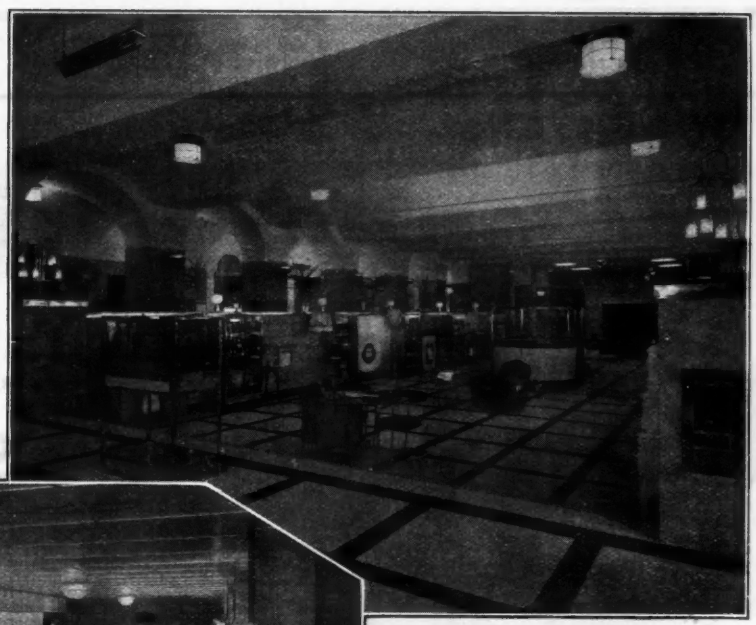
Returning to the aisle, a facing entrance leads into the lecture room, with seating accommodation for about 160 persons. A platform at the opposite end is furnished in accordance with modern practice for cookery lectures, with sink, built-in refrigerator, storage cupboards, &c. Provision is made for screening off the equipment when the room is required for meetings, lectures, or film exhibitions. A projector room is built at the opposite end to the platform. A small ante-room on the left of the platform is fitted with kitchen equipment for serving light refreshments. The lighting of the lecture room is by a combination of ventilating lamps, brackets, and pendants, all under distant control from the vicinity of the projector room. Behind the platform a rest room and office for the demonstrators has been provided.

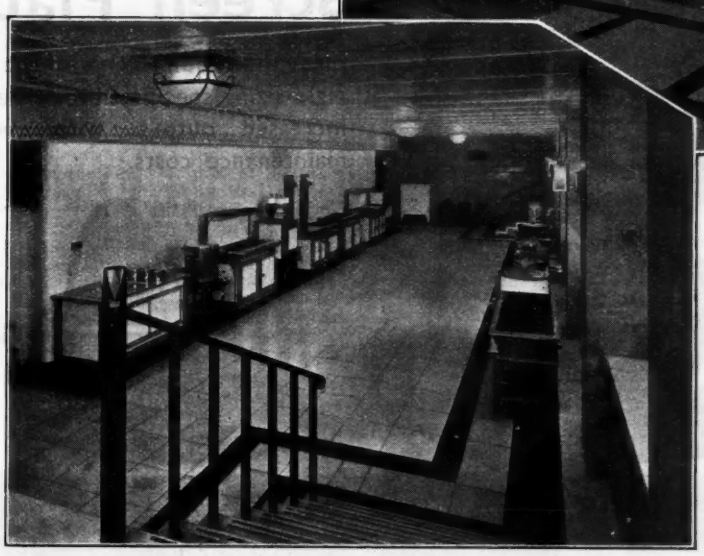
Through the exit on the left, and on the right-hand side between the marble columns, a model kitchen, bathroom, and canteen are shown. These have been equipped with a selection of appliances which should be of interest to many. In the centre and against the surrounding walls of the hall accommodation has been provided for a display of large scale catering equipment representative of modern patterns and to meet almost any catering need.

The lighting arrangement of this hall is by a combination of ceiling ventilating lamps and brackets, and mention may be made of the soffit or concealed lighting over the centre display stand, canteen, and windows of the model rooms. All illuminated direction signs disposed over the various entrances or exits are gas operated and switch controlled.

Examples of overhead radiant panel heating may be seen in operation on the exterior wall of the lecture room.

The scheme on the ground-floor ceiling has already been referred to, and the following is a description of the illustrations on the basement ceilings. On the low level ceiling, facing the passenger lift and beginning at the left, are drawn two cooling worlds from which are springing the symbols of man-made light from the earliest times—*i.e.*, rush light, torch, oil lamp, colza oil lamp, fish-tail gas bracket, and incandescent burner—all leading towards a sun eclipsing a darkened world, and all of them with a gradually brightening Star beside them.





Above is a general view of the Main Showroom, while on the left is the Basement Showroom, where large-scale catering appliances are displayed.

Traffic Vibration

Rigid or Self-adjusting Joints?

Not many of the problems brought into being by the remarkable growth of road transport during the last decade are capable of easy solution.

There is at least one exception, however. For instance, though much has been heard of the danger caused to historic buildings by traffic vibration, the harmful effects of such vibration on water and gas mains are not so apparent. To water and gas engineers responsible, however, for the maintenance of these essential public services, this was a very real problem until a few years ago, for rigidly-jointed mains could not be expected to withstand the severe vibration caused by modern conditions.

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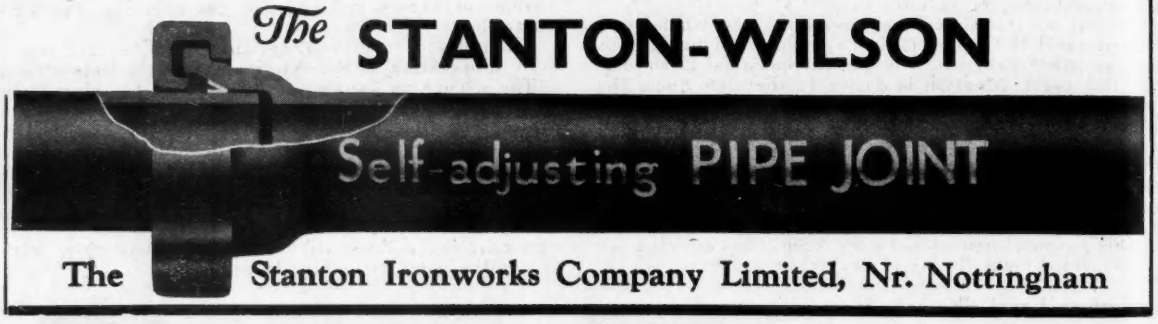

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On the left side and over the model rooms are decorations of gas fires beginning with the very early Tea Cosy fire (1870) to the terra-cotta stove and Wizard fire of 1900, and the tubular radiant gas fire of to-day. The story is completed by the picture of a blazing sun (source of all energy and light) which casts its light and heat over the earth.

The central longitudinal display is decorated as a fiery dragon whose head is formed of bunsen burners (the discovery upon which nearly all modern gas lighting and heating depends). On the right, or aisle side, the ceiling is decorated with pictures of modern gas apparatus—*i.e.*, grill kettle, haircurlers, smoothing iron, and stove.

The whole scheme is based upon the idea that the sun provides all natural energy, heat, light, and that Bunsen's discovery enabled a great fiery dragon of uncontrolled gas to be actively used for the benefit of humanity.

Over the seating in the lecture room is a rainbow (ancient legend of riches), but instead of bags of gold at its feet, five domestic gas appliances are drawn in place thereof. The theme being that the story of the Rainbow *supposes* bags of gold and good things, while the use of gas in the illustrated forms gives a reality to the supposition.

The whole of the ceiling decorations have been designed and executed for the Architect by Mr. Barry Hart.

It is confidently hoped that the new showroom will prove a valuable aid in expanding the use of gas in Manchester.

Gloucester's Public Lighting

A Ministry of Health Enquiry

The relative merits of gas and electricity for street lighting were discussed at the Guildhall, Gloucester, on Sept. 28, when Mr. G. H. Thiselton-Dyer, an Inspector of the Ministry of Health, held an enquiry into the application of the Corporation for consent to borrow £16,000 for the purposes of public lighting. The application, which was opposed by the Gloucester Gas Light Company, had reference to the proposal of the City Council to substitute electricity for gas in those streets at present lighted by gas. The Gas Company opposed the application on the grounds that it had been made under a misapprehension and if granted would lead to a breach of contract. Another ground of objection was that the proposed expenditure was unjustified in that it would impose on the ratepayers an unnecessary charge with no corresponding advantage.

The view of the Corporation, as expressed by the Town Clerk, was that in their desire to change over to electricity the City Council had been influenced by the consideration that electricity was a better and cheaper form of public lighting, and twice as efficient. The Town Clerk admitted, however, that all these points were within the realm of controversy, but maintained that the Gas Company could not give better lighting at a lower figure than the 1¾d. rate involved by the proposals in respect of which the application was made.

The Company complained that they had not been given an opportunity of quoting for an improved lighting system by gas under a re-arranged contract, and their Technical Adviser submitted a scheme which, he claimed, would be more effective than lighting by electricity, while the Commercial Manager of the Company said he could guarantee then and there gas lighting at least as good as if not better than electricity at a lower figure than £3 10s. per lamp, which was the cost of electricity, provided there was a contract for a reasonable period of years.

It was also pointed out by the Company that they had recently obtained contracts for lighting the whole of the suburbs of Gloucester and the lighting rate in these areas was about 4d. in the £ compared with 6·76d., the cost of public lighting in the city.

Effect on Rates.

The Town Clerk, in his opening statement, stated that the period for which the Corporation were asking to borrow the £16,000 mentioned in the application was 20 years, and the estimated increase to the rate due to the proposals, without taking into account any saving on Government grant, would be £5,405. The saving which would be effected by the proposals in the cost of public lighting was estimated at £2,400, which left a net charge to the rates of £3,005, equivalent to an increase of 1¾d. in the £ on the General Rate. He added that it was the desire of the Corporation eventually to change over the whole of the lamps at present lighted by gas to electricity. They had been influenced in that desire by one or two considerations. One was that they were convinced that electricity was a better form of lighting than gas for streets. He realized that that point was in the realm of controversy, but it was the conviction of the Committee and of the Council, and, he believed, of the majority of the citizens. In addition, the Committee had always been advised that the cost to the city of lighting by electricity compared with the present cost of gas was cheaper.

Evidence in support of the application was given by Alderman W. J. Bell, Mr. C. J. Scudamore (City Surveyor), Mr. F. H. Corson (City Electrical Engineer), and Mr. W. R. E. Alder (City Treasurer).

In cross-examination, Alderman Bell agreed that if the facts upon which the Council had based their policy had changed, and improved lighting could be secured by gas, it was reasonable that the Council should be asked to reconsider their decision. The data on which the Corporation had decided their policy was provided by their own officials and no one else. It was the only authority they had. He was not aware that the Gas Company had approached the Corporation time and time again with a proposal for supplying better lighting and at a cheaper cost. He was also unaware that the Distribution Manager in 1936 asked the officials of the Corporation if they might demonstrate a better system of lighting, and was told that it would be waste of time.

In reply to Mr. Studholme for the Gas Company, Mr. Scudamore agreed that the comparative figures laid before the Streets Committee were made up from an out-of-date gas lighting system and up-to-date electric lighting. It was the only comparison they could give.

Mr. A. R. McGibbon gave details of a gas lighting scheme which he had prepared, and which he claimed would be more effective than the serious variation in light output and patchy effect produced by electric lighting noticeable in some of the streets in Gloucester.

Mr. A. L. Morris (Commercial Manager of the Gas Company) said his impression of the interview with officials of the Corporation was that it would be useless for the Company to submit proposals for an improved lighting system. It was a matter of regret to the Company that they had not been permitted to quote for an improved service, and it was their desire even now to re-quote and give the Corporation something better than they had at present.

Summing up for the Corporation, the Town Clerk said there was no evidence to show that the rate would be less than 1¾d. in the £ increase if the Corporation accepted any proposal which the Gas Company might put forward. At the present time they had not formulated any proposals. They had not been asked to do so, and he was not certain at the moment whether the Council wished them to do so. The Corporation, as owners of the electricity undertaking, were satisfied on past experience that they could do very much better than the Gas Company could do. He appreciated that the application which the Corporation had made involved the complete annihilation of gas for street lighting, but that had been the policy of the Corporation for a great number of years. It was somewhat late in the day now for the Gas Company to attempt to explore the possibilities of gas. The Corporation had their own electricity system, and the matter was always in their own hands, subject, of course, to the control of the Ministry and to some extent of the Electricity Commissioners. He urged, on behalf of the Corporation, that there was no justification for disallowing the application on the grounds put forward by the Gas Company.

The Inspector intimated that he would make his report in due course.

The Society of British Gas Industries

City and Guilds Examination Prizes

The Council of the Society of British Gas Industries has again this year awarded prizes in connection with the examinations of the City and Guilds of London Institute in Gas Supply Practice and Gas Fitting. The examiners report that no candidate reached prize award standard in the Minor Course in Gas-Works Practice. The following are the details of the awards:

MINOR COURSE IN GAS SUPPLY PRACTICE.

First prize of £5 5s.—Ronald William Kirkbright (Technical College, Bradford).

Second prize of £2 2s.—Thomas Bird (Tunstall Technical Institute).

FINAL EXAMINATION IN GAS FITTING.

First Prize of £5 5s.—Basil Arthurs (Chiswick Polytechnic).

Second prize of £2 2s.—Leslie Ernest Palmer (School of Science and Art, Weston-super-Mare).

Littlehampton Consumers Have New Showrooms

Fine new showrooms were opened last Saturday by the Chairman of the local Urban District Council to serve the Brighton, Hove, and Worthing Gas Company's consumers in the recently acquired district of Littlehampton. The ceremony was followed by luncheon at the Beach Hotel

Erected on the site originally occupied by Warwick House, at the junction of Beach Road and New Road, the new showroom is undoubtedly one of the finest business premises in Littlehampton, and a dignified and worthy addition to the town. A practical point, it is more conveniently situated for the Company's Littlehampton customers, and is, therefore, likely to be more popular than the old showroom in Terminus Road. The frontage of the new premises is nearly 80 ft., with a depth of 56 ft., and a total width of 85 ft., the superficial area being well over 4,000 ft. Of the original Warwick House, the only portions to be used are the old cellars which, enlarged to form the basement of the new building, now house the Ideal gas boiler for central heating and hot water supply.

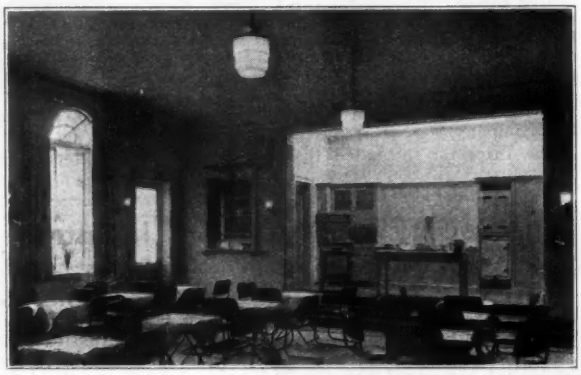
Looking at the elevation from Beach Road there is, each side of the main entrance, a fine window of the non-reflecting type, and these are flanked by smaller windows arranged specially for display purposes. On the ground floor there is the main showroom, around which are grouped the various sections devoted to the different branches of Mr. Therm's activities. On the east side are the water heating and refrigerator sections, on the west side there is the gas fire display room, the fires being shown fitted in surrounds in walnut and ebony with a Roman stone background—a very suitable setting for the modern gas fire.

On the wall of the main showroom, recesses have been arranged for the display of apparatus, and these recesses are illuminated from above with concealed gas lighting. This attractive feature emphasizes the attractiveness of the new colour finishes.

A very happy colour scheme has been selected for the whole of the ground floor; the ceilings are in primrose, the walls in straw, and the curtains which are in gold, have a beautiful terra-cotta design. The carpets, furniture, and lighting fittings all harmonize, the final effect being very cheerful and modern.

Demonstration Theatre.

Here, one senses, is a public utility undertaking which realizes that its customers are, in the main, women, and



The Demonstration Theatre.

has made every effort to create a showroom which is a fitting background for the services provided. This fact is particularly evident when one passes from the main showroom into the demonstration theatre. This theatre, which seats 100, is likely to prove very popular with Littlehampton housewives—particularly those who take a more than usual interest in cooking and household problems. The colour scheme is very fresh and attractive, and modern chairs and tables have been furnished to match.

The Brighton Company attach great importance to kitchen planning, and the platform of the demonstration theatre provides an excellent example of such planning. Fitted with "Peerless" cabinets, "Savestane" sink, sink water heater, and built-in refrigerator, it is the the housewife's ideal. Illumination is provided by a laylight (with gas lamps at night) above the demonstration platform, while chromium brackets and pendants provide the remainder of the lighting of the room. Here, indeed, is a lecture hall where the domestically minded woman can spend pleasant and profitable afternoons—and, in anticipation, a series of afternoon demonstrations has been arranged.

Two Glimpses of the Attractive Interior.

In addition to the sections already described, there is the cashier's office, and an attractive feature of this the "Southern" gas-ignited coke fire which is installed in a handsome Portuguese marble surround. This fire not only demonstrates the use of Portslade gas coke for domestic heating purposes, but also serves to show to those who are anxious to cut down housework, how a coke fire eliminates the unnecessary drudgery of fire laying.

The first floor is planned mainly as office accommodation and comprises the Chief Clerk's room, Distribution Superintendent's and general offices; there is also a staff room and kitchen.

The contractors were Messrs. Rice & Sons, Ltd., of Brighton, and the interior furnishings were carried out by Messrs. Heal & Sons, Ltd., of London, and Cox & Co., of Birmingham, in conjunction with Nautilus Company, Ltd., of Luton.

Opening Ceremony and Luncheon.

The opening of the new premises was performed by the Chairman of the Urban District Council (Mr. H. W. Townsend, J.P), who was presented with a golden key as a memento of the occasion.

The Chairman of the Brighton Gas Company (Mr. A. M. Paddon) thereafter received the guests in the demonstration room. He was supported by other Directors of the Company, including Lord Cautley, Sir Charles Morgan, and Mr. William Cash, together with Mr. P. E. Browne (General Manager), Mr. Hyde C. Burton (Secretary), and other senior officers of the Company. Among those present were Mr. E. V. Evans (General Manager of the South

Metropolitan Gas Company), Mr. K. Leslie Mortimore (General Manager and Secretary of the Hornsey Gas Company), other members of the Littlehampton Urban District Council, and a number of prominent local residents.

After an inspection of the new premises, the party adjourned to the Beach Hotel, where luncheon was provided at the kind invitation of the Gas Company, Mr. Paddon presiding.

The Loyal Toast having been duly honoured, the Chairman extended a hearty welcome to their guests, saying how glad the Company were that they were able to be present on that occasion. He also thanked the Chairman of the Urban District Council for performing the opening ceremony. So far as he could gather, went on Mr. Paddon, there had been no particular animosity shown towards the Brighton Company since they had taken over the Littlehampton supply. Previously, he believed, there had been objection taken to a gas-works going "full blast" in the district; but now the Brighton Company had taken the manufacturing side seventeen miles away.

So far as the new premises were concerned, said Mr. Paddon, they had been desirous of conforming to the architectural amenities of the town, and in this respect they had been very careful in the design and construction of the new building. He thought they had been successful in this respect. There were, for instance, no Epstein statues on the front of it; secondly, the site might, perhaps, have been occupied by a cinema; thirdly, it might have been a public house. Altogether, he thought it did not derogate from the amenities of Littlehampton. In conclusion, Mr. Paddon said that the object of the Company would be to give their consumers, through these new showrooms, the very best service—and not charge too much for it. He finally asked those present to drink the health of the town of Littlehampton, coupled with the name of the Chairman of the Urban District Council.

The Chairman of the Urban District Council said that he greatly appreciated the honour that had been done him in asking him to open the Gas Company's new showrooms. The building was a fine acquisition to the town, and he congratulated the Directors, the General Manager, and the Architect on such splendid premises. The site, he said, had originally been intended for residential property, and they had been particularly anxious not to have anything erected there which would mar the site of the War Memorial opposite. The Directors of the Company had met them in this respect by the erection of that fine building. Mr. Townsend went on to refer to the successful efforts of the Brighton Company to improve the quality and pressure of the gas supply in Littlehampton. In addition, they had added to the amenities of the town. In conclusion, he spoke of the Company's staff welfare schemes, which made for good relations between the Company and their employees, and was reflected in service to the consumer. Finally, he thanked the Company very much on behalf of the guests, for their kind hospitality on that occasion.

MANCHESTER AND DISTRICT JUNIOR GAS ASSOCIATION.

THE PRESIDENT

Mr. J. Albinson was educated at Macclesfield Grammar School and the University of Manchester, graduating with honours at the School of Chemistry under the late Prof. H. B. Dixon. After serving during the war with the Royal Engineers, he joined the staff of the Bolton Gas Department in 1919, being subsequently appointed to the staff of the Bradford Road Works of the Manchester Corporation Gas Department. At the inauguration of the Partington Works he was appointed Chief Chemist. Mr. Albinson has been a member of the Manchester and District Junior Gas Association for 18 years, and has served on the Council for 6 years.

Presidential Address

OF

J. ALBINSON, B.Sc., A.I.C.

Presented at the Opening Meeting of the Association, held at Manchester on Saturday, Oct. 2.

It is only in recent years that the importance of physics and physical chemistry has been recognized in the Gas Industry. The physicist has a wide field of research in the production, distribution, and utilization of gas. In all these fields of activity the physical problems are the most important. Modern physics has concentrated on the elucidation of the structure of the atom, and the knowledge we have of atomic structure has great importance in all physical and chemical processes.

It must always be remembered that coal gas exists in the molecular form and the great advantages and economy in use for all heating and lighting processes are due to its physical state.

The physical processes which are involved in carbonization are many and varied. The sizing of the coal influences the transfer of heat through the charge. The heat conductivity and radiation properties of the retort material profoundly influence the speed of carbonization and the degree of cracking of primary products in the retort. The swelling and plasticity of coal when carbonized are inter-related physical phenomena, depending upon the formation of a colloid sol of coal particles in liquid oil produced by decomposition.

The cooling of gas and subsequent treatment, by washing, are largely a series of physical processes controlled by film or surface action. The almost universal use of oxide of iron purification is an example of surface action on an enormous scale. Catalytic processes are being involved in the Gas Industry and will be of greater importance in the future. These catalytic actions are surface actions. It can be readily understood how surface chemistry and physics play such an important part in works and utilization problems. The properties of surfaces are not the same as the bulk of a substance, due to the added molecular energy present at the surface.

Pulverized coal is perhaps the nearest approach to gaseous fuel which can be obtained, but the finest particle of pulverized coal contains millions of molecules, all of which have ultimately to contact with molecules of oxygen for combustion. In contrast, gaseous fuels, being molecular, have the maximum surface of contact with oxygen for combustion, and the energy of the fuel is instantly, and at will, available for use.

An interesting application of physical knowledge is found in the control of crystal growth in sulphate of ammonia saturators. It is found that if the saturator bath is kept in a state of agitation by means of compressed air, gas, or mechanical means, and at the same time a high percentage of solid sulphate of ammonia allowed to remain in the bath, the crystals already present will begin to grow, in preference to the formation of fresh nuclei. If small quantities of ferric salts are present, the crystals grow long and needle-shaped, the growth taking place along the major axis of the crystal. If the quantity of ferric salts present is controlled by the addition of a small quantity of suitable chemicals, the crystal grows uniformly, and rice-shaped crystals will result. The ferric salts probably cause surface activation of the crystals on the surfaces of greater rate of growth.

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Perhaps the most obvious development of physics in the Gas Industry is the perfecting of instruments for physical measurements connected with the manufacture of gas. These instruments have been developed with surprising ingenuity and rapidity. We have now the choice of three recording calorimeters approved by the Gas Referees. Thermometers of all types and for every purpose, both indicating and recording, have become available. Automatic control of temperature on process work is everyday practice. Flow meters of better design and of great accuracy are in common use, and orifice plate flow meters are used extensively where great accuracy is not demanded. Descriptions of these and other instruments can be found in the literature of the Gas Industry.

In this Paper I propose to deal, in some detail, with two applications of physics to the Gas Industry, viz.:

(1) The application of electrostatic precipitation to the cleaning of coal gas.
(2) The application of X-ray analysis to our knowledge and valuation of coal.

Electro Static Precipitation.

It was in the year 1824 that the first observation of the action of an electrical charge on dust particles was made by Höhlfeld, of Leipzig. Guitard in 1850 briefly mentions the same phenomenon in the "English Mechanics."

It was J. W. Clark and Sir O. Lodge who really conducted the first detailed research into the subject in 1884, and from that date the modern technique of the industrial application of the first discovery has gradually developed. Clark and Lodge were investigating the cause of the dust-free space which can be observed near hot bodies. It was shown that dust particles cannot get into contact with a hot body, but are bombarded away from it by molecular impacts. This molecular bombardment, somewhat similar to Brownian movement, drives the dust particle from a hot to a cold surface. This is the main cause of the dirty patches which sometimes appear above gas, electrical, and other heating and lighting appliances, for the heat is the cause of the deposition of dust particles on objects removed from the source of heat.

Clark and Lodge showed that by electrifying the hot body, the action of dust repulsion was very greatly intensified, and the higher the electrical potential of the body, the greater the action. Tar fog in gases and fog in the atmosphere have their origin in minute dust particles. In the case of coal gas, the dust is derived from the coal and from minute particles of ammonium chloride. These dust particles act as nuclei of condensation during the initial cooling process. The dust particle surrounded by its film of tar behaves towards an electric charge exactly as the dust particle in the experiments of Clark and Lodge.

The mechanism of the action is explained on the basis of our knowledge of atomic structure. The atom consists of a central positive nucleus, around which the planetary electrons—negatively charged—are disposed, the whole being electrically neutral. A molecule is considered to consist of two or more atoms which are associated by reason of their sharing one or more electrons. If, by external force, an electron is driven from the neutral structure, the atom or molecule becomes positively charged. If the atom or molecule absorbs an electron, it becomes negatively charged. These positively or negatively charged atoms or molecules are known as positive or negative ions. Most gases are slightly ionized by the action of radio-active bodies present in the earth's crust or by cosmic radiations, and gases in the ionized condition have the power to conduct the electric current in a slight degree.

The ions present in the gas from such natural sources when subjected to a powerful electric field begin to move, and, if the field be powerful enough, can acquire such high velocity that when a collision occurs with another neutral molecule, the impact is of sufficient force to disrupt the molecule and produce positive and negative ions. The newly-formed ions are in turn accelerated in the electric field and form more ions, and the progressive ionization of the gas takes place, the process being known as ionization by collision. When subjected to such a process, the fog particles in gas become attached to the ions or entrained by the velocity of the ion, and are drawn to the depositing electrode.

The Electric Field.

A suitable electric field is the first requirement of such electrostatic action to provide the ionization of the gas and the impelling force on the fog particles.

Alternating current can be used if the gas is moving very slowly or is still. The rapid alternating polarity produces flocculation of the particles and they fall from the gas by gravity. In most industrial processes, the gas velocities are high and volumes are enormous. The use of direct current is necessary and very much more effective, since it drives the suspended particle uniformly to the depositing electrode. It has been found that the negative ion has a greater mobility than the positive and precipitation is more effective when the depositing electrode is positive and the ionizing electrode negative.

The essential features of electrostatic tar fog precipitators consist of:

(1) The electrical machinery for generating the ionization current.
(2) The treatment vessel.

The electrical machinery for generating high tension unidirectional current has only been perfected in recent years, and this is giving a great impetus to the use of electrostatic precipitation in the Gas Industry. There are several methods of producing such high-tension current. The most desirable conditions are regularity of current output—*i.e.*, voltage without fluctuation and economy in energy consumption, together with mechanical and electrical reliability.

The second essential feature is the treatment vessel. This consists of a cylindrical shell in which is placed a large number of vertical tubes through which the gas passes. Centrally disposed in these tubes are the discharge electrodes of wire of about $\frac{1}{8}$ in. thickness. These wires are kept taut and in a central position by means of suitable suspension devices. The wire is charged to a potential of 30-40 KV., and the tubes and vessel are earthed. The crude gases pass upwards through the tubes, and all particulate matter is swept to the depositing electrodes, falling as fluid to the bottom of the treater.

The factors governing the efficiency of removal of tar fog are:

(*a*) Time of contact with ionizing zone.
(*b*) Degree of ionization of the gas.

(*a*) The time of contact is determined by the velocity of the gas, which, in turn, depends upon the size of the apparatus relative to volume treated per second. A gas velocity of 5 ft. per second through treater gives a very high efficiency.

(*b*) The degree of ionization of the gas is controlled by the potential difference between electrodes. A potential difference sufficient to give a current of 1·5 milliamps. per wire is a suitable figure for gaseous velocity of 5 ft. per second. Under the above conditions 99-100% removal of fog will take place.

The efficiency of removal of fog is not limited to any particular size of particle. The size and density of the particle, however, determine the maximum permissible gas velocity. The particles of fog are so small as not to be appreciably affected by gravity and, consequently, the path of the particle from the gas to the depositing electrode is the resultant of the velocity imparted by the electric field and the velocity due to upward flow of gas carrying the particle.

Partington Plant.

The plant at the Partington Works, Manchester, was designed for the treatment of 5 million cu.ft. of gas per diem at 60° F. and 30 in. B., but treated at a temperature of 75-80° C. saturated, as the gas leaves the vertical retort house.

The treater has 106 tubes and is heavily lagged, not more than 1-2° C. drop in temperature taking place as the gas passes through the treater. The lead-in insulator is kept clean by a stream of warmed purified gas circulating through the insulating chamber.

The applied voltage is generated by the English Electric Company's system of direct current generation, which gives 30 K.V. at 1,450 revs., using a 5 h.p. motor to drive the set. A very steady voltage is maintained at the output insulator, and ingenious electric devices protect the generator from temporary arcing and short-circuiting overloads.

The general considerations which led to the installing and position of the treater were:

(*a*) A desire to effect, as completely as possible, separation of the higher tar acids (colouring bodies) from the ammonia liquors (completion of the effluent treatment scheme).
(*b*) The completion of the tar treatment scheme to recover from the crude tar, refined tar, and creosote oil, using the sensible heat of the gas in the hydraulic mains for the process.

It was found that the partial distillation of the tar in the hydraulic mains (Cooke-Holton process) gave a creosote fraction at the primary condensers which was contaminated by tarry matter carried forward in the gas as fog. The removal of this fog from the hot gas gives a creosote oil at the condensers free from tar.

Theoretically, the condition of the gas (temperature and pressure) does not materially alter the operating principles of the electrostatic process, and in general this has been confirmed in practice. Due allowance must be made

to deal with a much greater volume of gas at the elevated temperature and also a greater quantity of tar fog.

The greatest difficulty has been to find a wire for the discharging electrode which would withstand the conditions of stress set up in the treater. It appears that the combined movement of the gas and the electric field sets up a rapid vibration of the wires. This causes an intensely rapid reversal of stresses in the wire leading to work hardening of the wire and ultimately to failure. This trouble has been overcome, with a large measure of success, by using cabled stainless steel wire especially heat treated, and by using specially designed suspension gear.

The operation of the treater is simple and efficient, and labour charges are small. The hot, crude gas denuded of its tar fog is subsequently condensed, and the creosote oil deposited at the condensers finds a ready market either crude or after naphthalene separation.

X-Ray Analysis of Coal.

Rontgen, in the year 1895, made the discovery of the pentrating radiations which are known as X-rays. The chief property of these radiations was the power to penetrate opaque material and to affect the photographic plate.

Medical and surgical applications were immediate, but their use for chemical, physical, and industrial problems was of later date. The X-rays have the power of penetrating matter, the absorption of the ray—*i.e.*, the degree of penetration—being proportional to the atomic weight and the thickness of the material.

X-rays also behave similarly to light rays in their property of being reflected and diffracted by matter. Their property of diffraction is utilized to determine the atomic configuration in space of the material through which the rays are being diffracted. The method of absorption of X-rays for the analysis of fuel was used by Couriot as long ago as 1898, when he showed how the inorganic mineral skeleton of the coal substance, the organic matter, and the mineral ash (extraneous ash) had differing absorptions and could be indicated in a radioscopic picture of the coal.

The technique of X-ray analysis of coal is to take a section of the coal from the seam parallel to the plane of bedding, reduce the specimen to standard size and thickness, and pass through the sample a beam of X-rays which falls on to the photographic plate.

Kemp, and his co-workers, have perfected this method of attack on the problem of coal analysis, and much valuable information is being obtained by its use at the Fuel Research Station. The X-ray analysis of coal yields a rapid and simple means of ascertaining the mode of aggregation of the coal ash. It allows the possibility of discriminating between the various forms of coal ash, leading to an increased knowledge of the origin and structure of coal and the growth of coal seams. It is possible to separate the constitutional ash of the coal from the extraneous ash.

The importance of this discrimination has its application in coal washing. A radioscopic analysis of the coal will indicate the exact effect of coal washing and the true physical nature of the coal substance present, and from this can be deduced the degree of crushing necessary, prior to washing, in order to obtain the maximum cleaning efficiency. It is clear that the constitutional ash associated with the coal substance cannot be removed by washing, and this determines the lower limit of ash content.

Influence of Mineral Matter.

The mineral matter in coal has importance in influencing the nature of the products of carbonization, by catalytic action. The maximum catalytic action can only be expected to occur when the ash is finely distributed through the coal mass—*i.e.*, ash of constitution. The adventitious ash plays but a minor rôle.

X-ray analysis is the only satisfactory method of attacking this problem, and the research into the question of probable catalytic actions of coal ash in carbonization must find radioscopic methods of great importance. The value of radioscopic methods of analysis is also seen in the fact that the pure coal substance can be distinguished and isolated without in any way destroying or changing the coal substance.

It may be of importance to ascertain if a coal is liable to spontaneous combustion. If sulphide of iron is present as pyrites or marcasite, an X-ray analysis will give a definite answer. A study of X-ray photographs may also determine if the ankerites and pyrites found in coal are end products of the bacterial decomposition of the original coal-forming material, being extruded from the coal during coalification, or whether these substances are intruded into the coal mass after coalification has taken place. A further application of X-ray analysis could be the routine testing of mine dust samples. It should be possible to indicate by X-rays the degree of stone dusting of the inflammable coal dust, and, by suitably arranged apparatus, continuously operated, to test an enormous number of samples from all parts of a mine in a fraction of the time taken to perform an ordinary ash analysis.

Study of the Constitution of Coke.

The method of diffraction of X-rays has been applied to the study of the constitution of coke. It has been shown by this method that coke contains graphitic carbon, that the graphitic carbon is present as crystals of colloidal dimensions, and that the size of these crystals varies from one coke to another.

It has been established that cokes containing the smallest crystals of graphite are generally the most reactive to CO_2 when the reactivity is measured under standard condition. The factors which influence the production of reactive cokes are many and not fully understood. It has been assumed, on visual evidence only, that the low reactivity of some high-temperature cokes has been due to the deposition on the surface of a layer of non-reactive bright graphitic carbon. The presence of graphitic carbon has been confirmed, not only in metallurgical cokes, but in vertical retort coke and low-temperature coke, and it seems that the varying reactivity, if due to graphitic carbon, may all depend on the actual size of the graphitic carbon crystal present.

The diffraction method has also been used to contribute to the problem of coal structure. It has been established that of the four types of coal found—viz., vitrain, durain, clarain, and fusain—the vitrain is the true coal substance and is of a colloid nature. The durain is a colloid system of the suspendoid type consisting of vitrain as the dispersion medium, with the ash and vegetable detritus as the disperse phases. Clarain is a mixture of vitrain and durain, while fusain consists mostly of free carbon.

Statistical Data and Costs for Year Ended Sept. 1, 1937.

The following tables show the cost of operation of the de-tarrer, together with the products obtained during 12 months' continuous operation of the combined Cook-Holton tar plant and the W.W.D. de-tarrer. It should be noted that although the plants operate on the vertical gas streams only, the whole of the tar produced in the works is treated, and the light oils recovered.

Statistical Data.

Coal carbonized—	Tons.
Vertical house	73,650
Horizontal house	42,124
Total	119,774
Prepared tar—	Gallons.
Total production	1,480,327
Per ton of coal carbonized	12·79
Creosote oil—	
Total production	165,000
Per ton of coal carbonized	1·43

Cost of Operation.

	£
Capital and sinking fund charges—10%	200
Electrical power—0·66d. per unit	244
Labour—1/10th man per shift	54
Supervision	36
Repairs and maintenance	135
Total cost	£669

	Per Gallon. d.	d.
Average price of recovered oil		6·0
Average price of tar	2·32	
Add operating costs	0·98	
		3·3
Net increase in revenue		2·7

Or an increased revenue of £1,856 per annum.

In addition to the increased revenue there are other advantages, not directly assessable financially, but definitely associated with the use of the de-tarrer, viz.:

(*a*) Less back pressure.
(*b*) Clean effluent.
(*c*) Clean exhauster and saturator.
(*d*) No P. and A. baskets to clean.
(*e*) No sludging of benzole extraction oil.

Distillation Test of Creosote Oil.

The following is a typical distillation of the creosote oil:

%	°C.
Drip point	105
8	180
20	190
45	200
68	210
84	220
91	230
95	240
Phenols (tar acids)	17·6%
Water	0·3 ,,
Free carbon	absent

Typical Analyses of Tar Fog Content of the Gas at De-tarrer.

Inlet tar fog . . . 2,400 gr. per 100 cu.ft. at 60° F. and 30 in. B.
Outlet tar fog . . 5·2 gr. per 100 cu.ft. at 60° F. and 30 in. B.
Removal 99·8%.

Inlet tar fog . . . 2,700 gr. per 100 cu.ft. at 60° F. and 30 in. B.
Outlet tar fog . . 7·0 gr. per 100 cu.ft. at 60° F. and 30 in. B.
Removal 99·75%.

Typical Analyses of Liquors.

The liquors condensing at the condenser are clear liquids, colourless, and only slowly turning to light yellow after standing exposed to air.

Typical Analysis of Condenser Liquor.

	Gram. per 100 c.c.
Monohydric phenols	1·024
Thiosulphates as S	0·005
Thiocyanates as CNS	0·016
O A. per 100,000	2,244

4 hr. at 27° C.

The above liquor after benzole washing becomes:

	Gram. per 100 c.c.
Monohydric phenols	0·0013
Thiosulphates as S	0·024
Thiocyanates as CNS	0·019
O A. per 100,000	58

4 hr. at 27° C.

It will be seen that such a liquor is amenable to dephenolation treatment to yield a final washed liquor containing inorganic oxygen-absorbing material only.

Analyses of Retort House Circulated Liquor.

A retort house circulated liquor has quite different values. After exhaustive benzole washing, a circulated liquor gave:

	Gram. per 100 c.c.
Monohydric phenols	0·012
Thiocyanates	0·116
Thiosulphates	0·026
O.A. 4 hr. at 27° C.	1,250
Difference figure	1,109

It will be seen that this liquor is not amenable to benzole washing, since with a most stringent wash 1109 part O per 100,000 would be absorbed by the liquor due to organic material not soluble in benzole.

This demonstrates the value of de-tarring in any liquor treatment system. Such a liquor as the one above would be strong in ammonium chloride, and is best treated by evaporation to dryness for recovery of chloride of ammonia.

Analyses of liquors are given to illustrate the action of the de-tarrer on the liquors produced at various parts of the system. The condenser liquor is extremely high in monohydric phenols all removable by dephenolation by benzole washing.

The retort house liquors—*i.e.*, liquors circulated in hydraulic mains and deposited prior to de-tarring in the system—are not amenable to dephenolation.

Athletic and Social

Portsmouth Tennis Supper and Dance.

A successful supper-dance was held by the Tennis Section of the Portsmouth and Gosport Gas Company's Social and Athletic Club on Sept. 22 at the Club Room.

About 90 members and friends were present, and a thoroughly enjoyable evening followed the presentation of trophies and prizes by Mrs. T. Carmichael, wife of the President. Mr. T. Carmichael congratulated the Section on the conclusion of another successful season, and announced that Capt. R. J. E. Baker, a member of the Board of Directors, had presented a cup to be competed for annually by the ladies of the Section.

Dancing continued until the early hours of the morning to the music of Mr. W. Fry and his Collegians.

Watford Co-Partnership and Pension Funds.

The annual report on the Co-Partnership Fund of the Watford and St. Albans Gas Company for the year ended June 30, 1937, states the memberships of the Company's Schemes at June 30, 1937, were as follows: Co-Partnership Fund, 645; Pension Fund (1928), 463; Life Assurance Scheme, 88; and Group Life and Pension Scheme, 140. The voluntary contributions to the Co-Partnership Fund of £1,492 show an increase of £150 over last year's figures. Since the inception of the Fund, £1,259 "A" Stock, £24,312 Ordinary Stock, £2,350 5½% Preference Stock, and £200 5% Preference Stock have been allocated to Co-Partners. The Pension Fund (1928) shows an increase of £11,555 over last year, making the total Accumulated Fund to date £67,333. 32 pensioners received their pension, either wholly or in part, from the Fund, while 23 received pension entirely from the Company. The Committee wish to congratulate the employees on the splendid collections made by them for various local Institutions: Watford Peace Memorial Hospital, £91; St. Albans and Mid-Herts. Hospital (including Nursing Association), £83; West Herts. Hospital, £37; St. Dunstans, £4; Hospital Savings Association, £17; making a total of £231.

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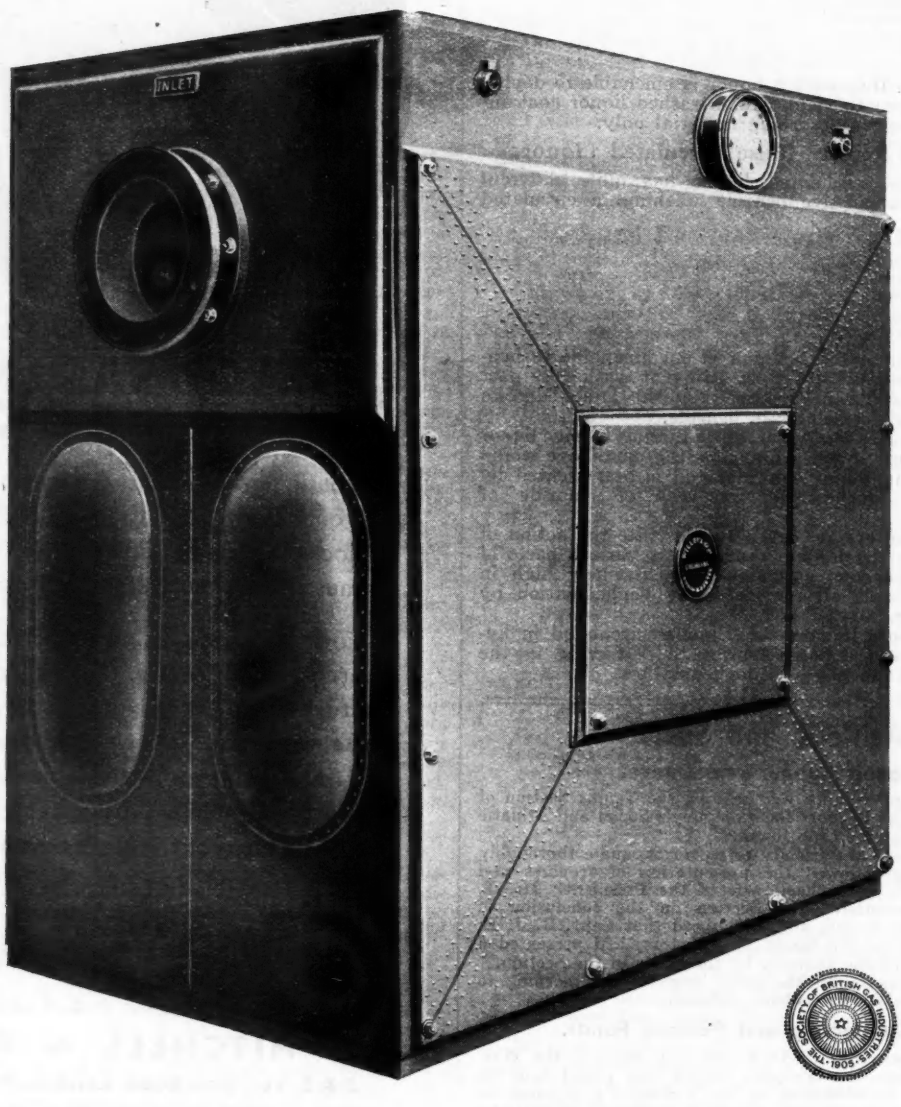

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Gas Markets and Manufactures

Stock Market Report

(For Stock and Share Lists, see later pages)

Stock Exchange affairs were again unsatisfactory last week, and with the exception of a few brief spurts here and there the volume of business was of small dimensions. The uncertainty in the United States continued a disturbing influence, and the doubtful situation in France together with a big drop in metal prices aggravated the position still further. Despite these depressions, however, the general undertone remained firm. Another rise took place in British Funds, and the firmness in this group extended to other high-grade investment securities. In the Kaffir market there was a good demand for leading shares, and with a shortage of supplies prices speedily moved upwards. At the close there were indications of a recovery in several directions which may have a marked effect on the current week's business.

The Gas Market passed through another uneventful week. The volume of business was a shade heavier and covered a wider range of securities, while quotations generally remained unaltered. In the Official List the only change of importance was a drop of 3 points in Commercial ordinary to 87½, at which price the yield on a 5% dividend (the rate paid for the past two years) works out at £5 14s. 3d.%. The Company increased its price of gas at Lady-Day last, and the extra receipts from this source together with the higher revenue from coke will doubtless enable it to pay at least the basic dividend of 5% for the current year. The reserve fund at December last amounted to £82,898.

At the Provincial Exchange Newcastle units recovered the ½d. lost a week ago, but Derby consolidated dropped 5 points to 145. There were no changes in the Supplementary List, but it will be seen that Associated Gas and Water 4% redeemable cumulative and 4% irredeemable preference stocks are now nominally quoted at 19s.-21s. and 19s.-20s. respectively.

Current Sales of Gas Products

The London Market for Tar Products.

LONDON, *Oct.* 4.

Prices of tar products in the London market remain as follows:

Pitch, 38s. per ton f.o.b.
Creosote, 6d. to 6½d.
Refined tar, 3¾d.
Pure toluole, 2s. 5d. to 2s. 6d.; pure benzole, 1s. 9d.; 95/160 solvent naphtha, 1s. 8d.; and 90/160 pyridine, about 11s.; all per gallon naked at makers' works.

Tar Products in the Provinces.

Oct. 4.

The average prices of gas-works products during the week were: Gas-works tar, 24s. 3d. to 29s. 3d. Pitch—East Coast, 37s. to 38s. 6d. f.o.b. West Coast—Manchester, Liverpool, Clyde, 37s. to 38s. 6d.* Toluole, naked, North, 1s. 8d. to 1s. 9d. Coal tar, crude naphtha, in bulk, North, 8d. to 8½d. Solvent naphtha, naked, North, 1s. 5½d. to 1s. 6d. Heavy naphtha, North, 1s. 3d. to 1s. 3½d. Creosote, *ex* works, in bulk, North, liquid and salty, 5d. to 5½d.; low gravity, 4⅜d. to 4½d. Heavy oils, in bulk, North, 5d. to 5¼d. Carbolic acid 60's, 4s. 1½d. to 4s. 3d. Naphthalene, £18 to £20. Salts, 90s. to 95s., bags included. Anthracene, "A" quality, 4½d. to 4⅝d. per minimum 40% purely nominal; "B" quality, unsalable.

* All prices for pitch are now quoted on the basis of f.o.b. In order to arrive at the f.a.s. value at any port it will be necessary to deduct the loading costs and the tolls whatever they may be.

Tar Products in Scotland.

GLASGOW, *Oct.* 2.

There is very little new business being placed on the market, but makers' prices continue remarkably steady.

Crude gas-works tar.—Actual value is 37s. to 38s. per ton *ex* works in bulk.

Pitch is only in small request with values easy at round 30s. to 32s. 6d. per ton f.o.b. Glasgow for export, and 30s. per ton *ex* works in bulk for home trade.

Refined tar continues to be offered freely at 3d. to 3¼d. per gallon free on rails for export, and 3½d. to 3⅝d. per gallon *ex* works in buyers' packages for home trade.

Creosote oil.—This year's production is well looked after and business into next year is now being considered. Values are steady as follows: Specification oil, 5½d. to 5⅝d. per gallon; low gravity, 6¼d. to 6½d. per gallon; neutral oil, 5¼d. to 5½d. per gallon; all *ex* works in bulk.

Cresylic acid.—While no new business of any consequence has been placed, makers continue to quote at round the following: Pale, 97/99%, 3s. 11d. to 4s. 2d. per gallon; dark, 97/99%, 3s. 8d. to 3s. 10d. per gallon; and pale, 99/100%, 4s. 4d. to 4s. 7d. per gallon; all *ex* works in buyers' packages.

Crude naphtha.—The small quantities available readily command round 6d. to 6½d. per gallon *ex* works in bulk, according to quality and district.

Solvent naphtha.—Business is slow but prices remain unchanged. 90/160 grade is 1s. 5d. to 1s. 6d. per gallon, and 90/190 heavy naphtha, 1s. to 1s. 1d. per gallon.

Motor benzole can be secured at about 1s. 4½d. to 1s. 5d. per gallon.

Pyridine.—Prices are nominal at 8s. to 9s. per gallon for 90/160 grade, and 9s. to 10s. per gallon for 90/140 grade.

Benzole Prices.

These are considered to be the market prices for benzole at the present time:

	s.	d.		s.	d.	
Crude benzole	0	9½	to	0	10	per gallon at works
Motor ,,	1	3	,,	1	3½	,, ,, ,,
90% ,,	1	4	,,	1	4½	,, ,, ,,
Pure ,,	1	8	,,	1	8½	,, ,, ,,

Gas Undertakings' Results

Blackpool.

In his annual report to the Chairman and members of the Blackpool Gas Committee, Mr. T. R. Cook, Engineer and Manager, states that for the year ended March 31, 1937, the gross profit of the Gas Department is £34,601, and after deducting loan charges of £24,120 there remains a net profit of £10,481. The balance of the appropriation account at March 31, 1936, was £30,360, out of which has been spent during the year the sum of £16,073, leaving a net amount in this fund of £14,287, which together with the net profit of £10,481, gives a balance of £24,768 at March 31, 1937. Of this amount it is proposed to allocate £8,310 for special expenditure, and to carry forward to the next year's accounts the balance of £16,458. During the year there has been an increase of gas sold of 55,557,700 cu.ft., or 4·17%. The number of street lamps within the Borough is now 5,896, accounting for 126,030,500 cu.ft. of gas used. Over 290 new lamps have been erected during the year in the area of gas supply. The business conducted through the showroom has been satisfactory and apparatus to the value of £32,896 has been sold: 1,970 cookers, 166 fires, and 626 other appliances.

Buxton.

The report of the Engineer and Manager of the Buxton Gas Department, Mr. F. G. Shaw, for the year ended March 31, 1937, states that the net profit was £4,111, which shows a considerable improvement on the previous year's figure of £2,705. This is the first report to embrace a full year's working of the new plant. Although the quantity of coal carbonized fell from 11,480 tons to 10,170, the gas made rose from 167,488,000 cu.ft. to 170 010,000 cu.ft., and the gas made per ton from 14,598 cu.ft. to 16,717 cu.ft., or 81 therms. The gas sold for public lighting has increased from 9,129,000 cu.ft. to 9,287,000 cu.ft. The total gas sold has increased from 157,587,600 cu.ft. to 159,937,800 cu.ft. The number of consumers is now 4,892, an increase of 46.

Colonial Gas Association.

The Directors of the Colonial Gas Association report that for the year ended June 30, 1937, after the payment of the loan and debenture interest and providing for income-tax and depreciation, the net profit for the year is £71,086. Adding the balance remaining from last year—*i.e.*, £25,337—the profits available are £96,423. Deducting therefrom the interim dividends paid in April last—*i.e.*, £34,029—leaves a balance at credit of the net revenue account of £62,394. The Directors recommend that a dividend at the rate of 8% per annum (less interim dividend of 4% for the half-year ended Dec. 31, 1936) be paid on the preference shares; and that a dividend at the rate of 6% (less interim dividend of 3% for the half-year ended Dec. 31, 1936) be paid on the ordinary shares; that the sum of £3,000 be transferred to the credit of reserve fund; and that the balance, approximately £25,364, be carried forward to the next account. The quantity of gas sold showed an increase of 6·1% upon the quantity sold during the preceding year. The corresponding increase in the quantity of gas sold by subsidiary gas undertakings was 3·7%.

400 plants in 24 countries

This installation, built for the Municipality of Svendborg, Denmark, is an interesting example of the modern Glover-West vertical retort plant designed for the smaller works It is an eight-retort unit with fuel-gas producers equipped for breeze-burning, waste-heat recovery plant and electric lift. Coaling is by means of an automatic skip-hoist.

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STOCK AND SHARE LIST

Official Quotations on the London Stock Exchange

Issue. £	Stock or Share	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations Oct. 1	Rise or Fall on Week.	Transactions, Lowest and Highest Prices During the Week.
1,767,439	Stk.	Sept. 6	8	8	Alliance & Dublin Ord. ...	168—173	...	...
374,000	,,	June 21	4	4	Do. 4 p.c. Deb. ...	95—100	...	...
558,890	,,	Aug. 9	7	7	Barnet Ord. 7 p.c.	158—163	...	...
300,000	1	Apl. 5	1/4⅛	1/9⅜	Bombay, Ltd.	26/6—28/6	...	27/-
179,915	Stk.	Aug. 9	9½	9½	Bournemouth sliding scale ...	200—205	...	...
590,407	,,	,,	7	7	Do. 7 p.c. max. ...	158—163	...	160
493,960	,,	,,	6	6	Do. 6 p.c. Pref. ...	133—138	...	...
50,000	,,	June 21	3	3	Do. 3 p.c. Deb. ...	79—84	...	...
262,025	,,	,,	4	4	Do. 4 p.c. Deb. ...	98—103	...	...
335,000	,,	,,	5	5	Do. 5 p.c. Deb. ...	116—121	...	117
357,900	,,	Aug. 9	7½	7½	Brighton, &c., 6 p.c. Con. ...	152—157	...	...
649,955	,,	,,	6½	6½	Do. 5 p.c. Con. ...	135—140	...	...
205,500	,,	,,	6	6	Do. 6 p.c. 'B' Pref.	127—133	...	...
855,000	,,	Sept. 20	8	7	British Ord.	146—151*	...	148
100,000	,,	June 21	7	7	Do. 7 p.c. Pref.	140—145	...	...
350,000	,,	,,	5½	5½	Do. 5½ p.c. 'B' Cum. Pref.	108—113	...	...
120,000	,,	June 7	4	4	Do. 4 p.c. Red. Deb. ...	95—100	...	...
450,000	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	102—107	...	...
450,000	,,	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...	...
100,000	10	22 May '33	6	4	Cape Town, Ltd.	1⅛—2⅛	...	...
100,000	10	6 Nov.'33	4½	4½	Do. 4½ p.c. Pref. ...	1⅛—3⅛	...	...
150,000	Stk.	June 21	4½	4½	Do. 4½ p.c. Deb. ...	79—84	...	...
626,860	,,	July 19	6	6	Cardiff Con. Ord.	125—130	...	...
237,860	,,	June 7	5	5	Do. 5 p.c. Red. Deb.	107—112	...	...
98,936	1	Apl. 5	2/-	2/-	Colombo Ord.	1⅛—1⅞	...	...
24,510	1	,,	1/4⅛	1/4⅛	Do. 7 p.c. Pref. ...	23/—25/-	...	...
739,453	1	Mar. 15	-/11·48	-/11·48	Colonial Gas Assn. Ltd. Ord.	18/—20/-	...	18/—18/8½
296,144	1	,,	1/3·30	1/3·30	Do. 8 p.c. Pref'	22/6—24/6	...	23/6—24/4½
1,775,005	Stk.	Aug. 9	5	5	Commercial Ord.	85—90	−3	85
620,000	,,	June 7	3	3	Do. 3 p.c. Deb. ...	74—79	...	...
286,344	,,	Aug. 23	5	5	Do. 5 p.c. Deb. ...	113—118	...	...
807,560	,,	Aug. 9	7	7	Croydon sliding scale ...	140—145	...	143½—144½
644,590	,,	,,	5	5	Do. max. div.	108—113	...	111½
620,385	,,	June 21	5	5	Do. 5 p.c. Deb.... ...	113—118	...	...
239,000	,,	Aug. 9	5	5	East Hull Ord. 5 p.c....	98—103	...	...
185,355	,,	Aug. 9	6	6	East Surrey Ord. 5 p.c. ...	120—125	...	...
176,211	,,	June 7	5	5	Do. 5 p.c. Deb. ...	113—118	...	...
250,000	1	July 5	4	7	Gas Consolidation Ord. ...	20/—22/-	...	...
250,000	1	May 24	4	4	Do. 4 p.c. Red Cum. Pref.	19/—21/-	...	...
19,255,284	Stk.	Aug. 9	5½	5½	Gas Light & Coke 4 p.c. Ord.	24/—25/-a	...	24/1½—24/7½
2,600,000	,,	,,	3½	3½	Do. 3½ p.c. max.	82—85	...	83—84
4,477,106	,,	,,	4	4	Do. 4 p.c. Con. Pref....	99—102	...	100—101
2,993,000	,,	July 5	...	3½	Do 3½ p.c. Red. Pref.	100—103	...	101½—102½
8,602,497	,,	May 24	3	3	Do. 3 p.c. Con. Deb. ...	76—79	...	77⅜—78½
3,642,770	,,	,,	5	5	Do. 5 p.c. Red. Deb. ...	111—114	...	—
3,500,000	,,	,,	4½	4½	Do. 4½ p.c. Red. Deb....	111—114	+1	112—113⅜
700,000	,,	Sept. 6	3½	3½	Do. 3½ p.c. Red. Deb....	94—99	...	97
270,466	,,	Aug. 23	6	6	Harrogate New Cons. ...	120—125	...	...
213,200	,,	Aug. 9	6	6	Hornsey Con. 3½ p.c. ...	118—123	...	...
5,600,000	,,	May 24	8	12	Imperial Continental Cap. ...	138—143	...	139—141
223,130	,,	July 19	3½	3½	Do. 3½ p.c. Red. Deb. ...	89—94	...	...
285,242	,,	Aug. 9	8½	8½	Lea Bridge 5 p.c. Ord. ...	170—175	...	173—174
75,000	,,	May 24	†10	†10	Malta & Mediterranean ...	150—160	...	...
392,000	—	Oct. 1	5½	5½	Metropolitan (of Melbourne) 5½ p.c. Red. Deb.	100—103*	+1½	102—103
231,978	Stk.	Aug. 23	5	5	M.S. Utility 'C' Cons. ...	101—106	...	104—106
968,657	,,	,,	4	4	Do. 4 p.c. Cons. Pref.	96—101	...	...
360,075	,,	June 21	4	4	Do. 4 p.c. Deb. ...	97—102	...	...
148,955	,,	,,	5	5	Do. 5 p.c. Deb. ...	115—120	...	...
125,000	—	July 1	3½	3½	Do. 3½ p.c. Rd.Rg.Bds.	96—99	...	...
675,000	Stk.	May 3	†6	†9	Montevideo, Ltd.	89—94	...	...
250,000	,,	Aug. 9	7½	7½	North Middlesex 6 p.c. Con.	150—160	...	...
396,160	,,	Aug. 9	5	5	Northampton 5 p.c. max. ...	110—115	...	110½
300,000	,,	Apl. 19	†9	†7	Oriental, Ltd....	162—167	...	165
468,537	,,	June 7	8	8	Plymouth & Stonehouse 5 p.c.	157—167	...	159
621,667	,,	Aug. 9	8½	8½	Portsmouth & Gosport Cons.	164—169	...	165—166
241,446	,,	,,	5	5	Do. 5 p.c. max. ...	104—109	...	...
73,350	,,	,,	5	5	Do. 5 p.c. Pref. ...	110—115	...	...
441,275	1	Sept. 20	1/1½	1/1½	Severn Val. Gas Cor. Ld. Ord.	21/6—23/6*	...	...
460,810	1	,,	-/10½	-/10½	,, ,, 4½ p.c. Cum. Pref.	19/6—21/6*	...	20/1½—20 3
133,201	Stk.	Aug. 23	5	8½	Shrewsbury 5 p.c. Ord. ...	130—135	...	...
1,371,752	1	Sept. 6	1/2⅝	1/2⅝	South East'n Gas. Cn.Ld. Ord.	23/6—25/6	...	23/6—24/-
871,636	1	,,	-/10½	-/10½	Do. 4½ p.c. Red. Cum. Pref.	20/—22/-	...	21/6—21/10½
498,818	1	,,	4	4	Do. 4 p.c. Cum. Pref. ...	18/—20/-	...	...
450,000	Stk.	Aug. 9	4	4	Do. 4 p.c. Deb.	99—102	...	...
150,000	,,	,,	3½	3½	Do. 3½ p.c. Red. Deb. ...	96—99	...	...
6,709,895	,,	Aug. 9	6	5	South Met. Ord.	102—105	...	102—103½
1,135,812	,,	,,	6	6	Do. 6 p.c. Irred. Pf. ...	130—135	...	133—134
850,000	,,	,,	4	4	Do. 4 p.c. Irred. Pf. ...	98—101	...	98—99½
1,895,445	,,	June 21	3	3	Do. 3 p.c. Deb. ...	75—80	...	76—77
1,000,000	,,	July 5	5	5	Do. 5 p.c. Red. Deb....	110—113	...	...
1,543,795	,,	Aug. 9	6	6	South Suburban Ord. 5 p.c....	120—125	...	...
512,825	,,	,,	5	5	Do. 5 p.c. Pref....	110—115	...	...
500,000	,,	,,	4	4	Do. 4 p.c. Pref....	95—100	...	96—97
250,000	,,	,,	...	§18/9	Do. 3¾ p.c. Red. Pref.	98—101	...	...
888,587	,,	June 7	5	5	Do. 5 p.c. Deb....	115—120	...	115
250,000	,,	,,	4	4	Do. 4 p.c. Deb....	97—102	...	...
200,000	,,	Sept. 20	...	3½	Do. 3½ p.c. Red. Deb.	94—99*	...	...
427,859	1	May 3	9⅜	1/2⅝	S. Western Gas & Water Ord.	19/—21/-	...	19/4½
160,523	1	Apl. 19	-/10⅜	-/10⅜	Do. 4½ p.c. Red. Cum. Pf.	20/—22/-	...	21/9
110,000	Stk.	June 21	4	4	Do. 4 p.c. Red. Deb. ...	97—102	...	...
750,541	,,	Aug. 9	5⅛	5	Southampton Ord. 5 p.c. ...	111—116	...	114½—115
148,836	,,	June 7	4	4	Do. 4 p.c. Deb.	97—102	...	...
350,000	,,	Aug. 23	5⅛	5⅛	Swansea 5⅛ p.c. Red. Pref. ...	110—115	...	...
94,000	,,	June 7	3⅛	3⅛	Do. 3⅛ p.c. Red. Deb. ...	95—100	...	...
1,076,490	,,	Aug. 9	6⅝	6⅝	Tottenham and District Ord.	135—140	...	136—138
409,835	,,	,,	5⅛	5⅛	Do. 5⅛ p.c. Pref....	121—126	...	125½
62,235	,,	,,	5	5	Do. 5 p.c. Pref. ...	110—115	...	...
371,850	,,	June 7	4	4	Do. 4 p.c. Deb. ...	97—102	...	99½
750,000	1	Apl. 5	4	6	U. Kingdom Gas Cor. Ord.	20/—22/-	...	20/6—20/9
936,338	1	May 3	4½	4½	Do. 4½ p.c. 1st Cum. Pref.	20/—22/-	...	20/6—21/3
740,933	1	June 7	4½	4½	Do. 4½ p.c.2nd Non-Cum.Pf.	17/—19/-	...	...
700,000	Stk.	Sept. 20	3½	3½	Do. 3½ p.c. Red. Deb. ...	96—99*	...	97½
373,939	,,	Aug. 9	7	7	Uxbridge, &c., 5 p.c. ...	147—152	...	...
133,010	,,	,,	5	5	Do. 5 p.c. Pref. ...	109—114	...	...
1,371,138	,,	Aug. 9	7	7	Wandsworth Consolidated ...	140—145	...	142—143½
1,620,615	,,	,,	5	5	Do. 5 p.c. Pref. ...	117—122	...	...
500,000	,,	,,	4	4	Do. 4 p.c. Pref. ...	97—100	...	98½
1,343,964	,,	June 7	5	5	Do. 5 p.c. Deb. ...	115—120	...	116—119
383,745	,,	,,	4	4	Do. 4 p.c. Deb. ...	97—102	...	...
558,342	,,	Aug. 9	7	7	Watford and St. Albans Ord.	140—145	...	142—144
200,000	,,	,,	5	5	Do. 5 p.c. Pref. ...	109—114	...	110
200,000	,,	,,	5½	5½	Do. 5½ p.c. Pref. ...	121—126	...	...
200,000	,,	June 7	4	4	Do. 4 p.c. Red. Deb.	97—102	...	...
100,000	,,	,,	3½	3½	Do. 3½ p.c. Red.Deb.	95—100	...	...

a.—The quotation is per £1 of Stock. * Ex div. † Paid free of income-tax. ‡ For year. § Actual.

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Issue. £	Stock or Share	When ex-Dividend.	Dividends. Prev. Hf. Yr. % p.a.	Dividends. Last Hf. Yr. % p.a.	NAME.	Quotations. Oct. 1.	Rise or Fall on Week.	Transactions, Lowest and Highest During the Week.
BRISTOL EXCHANGE.								
347,756	Stk.	July 19	6	5	Bath Cons.	120—122	...	...
1,667,250	,,	July 19	5	5	Bristol, 5 p.c. max.	117—118	...	...
120,420	,,	June 7	4	4	Do. 1st 4 p.c. Deb. ...	100½—102½	...	...
217,870	,,	,,	4	4	Do. 2nd 4 p.c. Deb. ...	100½—102½	...	...
328,790	,,	,,	5	5	Do. 5 p.c. Deb.	120—123	...	...
274,000	,,	July 19	5	5	Newport (Mon.) 5 p.c.max. ...	101—106	...	...
13,200	12	Sept. 6	8	7	Pontyp'l Gas & W. 10 p.c. 'A'	13—14	...	...
13,600	10	,,	6	5	Do. 7 p.c. 'B'	11½—12½	...	...
40,000	10	,,	6	5	Do. 7 p.c. 'C'	11½—12⅝	...	...
140,778	Stk.	Aug. 9	5	5	Weston-super-Mare Cons. ...	110—112	...	...
64,338	,,	June 21	4	4	Do. 4 p.c. Deb.	96—98	...	...
33,340	,,	,,	7⅛	7⅛	Do. 7⅛ p.c. Deb.	157—160	...	...
LIVERPOOL EXCHANGE.								
157,150	Stk.	Aug. 9	6⅛	5	Chester 5 p.c. Ord.	104—109	...	...
92,500	,,	June 21	4	4	Do. 4 p.c. Pref.	97—101	...	...
36,430	,,	,,	3⅛	3⅛	Do. 3⅛ p.c. Deb.... ...	89—92	...	...
41,890	,,	,,	4	4	Do. 4 p.c. Red. Deb. ...	98—102	...	...
2,167,410	,,	Aug. 23	6	6	Liverpool 5 p.c. Ord. ...	125—127	...	...
245,500	,,	June 21	5	5	Do. 5 p.c. Red. Pref. ...	99—104	...	...
306,083	,,	July 1	4	4	Do. 4 p.c. Deb. ...	102—104	...	...
106,280	,,	Aug. 9	10	10	Preston 'A' 10 p.c.	206—216	...	...
188,219	,,	,,	7	7	Do. 'B' 7 p.c.	147—157	...	...
NEWCASTLE EXCHANGE.								
122,577	Stk.	Aug. 9	8	8	Blyth 5 p.c. Ord.	165—166	...	...
732,000	,,	Aug. 9	5	5	Hartlepool G. & W. Cn. & New	122—123	...	...
2,061,315	,,	Aug. 9	5¾	5	Newcastle & Gateshead Con.	23.9—24/3*a*	+-/4½	...
682,856	,,	,,	4	4	Do. 4 p.c. Pref. ...	99—100	+⅛	...
776,706	,,	June 21	3½	3½	Do. 3½ p.c. Deb. ...	91—92	...	...
277,285	,,	Nov. 2	5	5	Do. 5 p.c. Deb. '43...	108—109	...	...
332,351	,,	Aug. 23	6	6	Sunderland 6 p.c. max. ...	139—141	...	...
NOTTINGHAM EXCHANGE.								
542,270	Stk.	Aug. 9	9	6	Derby Con.	140—150	- 5	...
55,000	,,	June 7	4	4	Do. 4 p.c. Deb.	100—105	...	...
20,000	10	June 7	5	5	Long Eaton 5 p.c. Pref. ...	10—12	...	...
80,000	Stk.	,,	5	5	Do. 5 p.c. Deb. ...	102—107	...	...
SHEFFIELD EXCHANGE.								
10,000	Stk.	Sept. 20	10	10	Great Grimsby 'A' Ord. ...	210—220*	...	...
6,500	,,	,,	10	10	Do. 'B' Ord. ...	210—220*	...	...
79,000	,,	,,	10	10	Do. 'C' Ord. ...	205—210*	...	...
1,806,339	,,	Aug 23	6	6½	Sheffield Cons.	145—149	...	...
95,000	,,	July 5	4	4	Do. 4 p.c. Deb.	100—103	...	...

Supplementary List of Stocks and Shares not Officially Quoted

202,152	Stk.	Sept. 6	25/-*b*	5	Ascot Ord.	100—105	...	...
128,182	,,	July 5	5	5	Do. 5 p.c. Pref.	108—113	...	...
573,156	1	May 24	5	5	Assd. Gas and Water Ord. ...	19/6—21/6	...	...
167,506	1	...	...	...	Do. 4 p.c. Red. Cum. Pref.	19/—21/-	...	20/-
253,118	1	...	...	...	Do. 4 p.c. Irred Pref. ...	19/—20 -	...	...
500,000	1	May 24	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	19/6—21/6	...	21/3
500,000	Stk.	Sept. 6	3½	3½	Do. 3½ p.c. Red. Deb. ...	95—100	...	...
31,035	1	Aug. 23	...	/4½	Associated Utilities 4 p.c. Pref.	17/—19/-	...	...
100,000	Stk.	...	...	...	Do. 3½ p.c. Red. Deb.	95—100	...	...
17,000	,,	Aug 23	8	8	Bognor Orig. Ord. 'A' ...	160—170	...	...
62,210	,,	,,	8	8	Do. New Addl. 'A' ...	160—170	...	...
87,160	,,	,,	7	7	Do. New 7 p.c. max. ...	141—146	...	...
37,440	,,	Aug. 9	10	10	Cam. Univ. & Town 10 p.c.max.	193—203	...	...
125,970	,,	,,	7	7	Do. 7 p.c. max.	135—140	...	...
39,025	,,	,,	5	5	Do. 5 p.c. max.	98—103	...	...
65,000	,,	Aug. 9	8½	7½	Eastbourne 'A' 5 p.c. ...	158—163	...	...
198,000	,,	,,	7	6	Do. 'B' 3½ p.c.	128—133	...	128—129
112,312	,,	,,	5	5	Do. 5 p.c. Pref.	108—113	...	...
130,000	,,	June 21	5	5	Do. 5 p.c. Deb.	115—120	...	...
24,000	30	Aug. 23	8½	8½	Great Yarmouth 8½ p.c. max.	44—49	...	...
59,400	30	,,	7½	7½	Do. 7½ p.c. max.	44—49	...	...
51,160	Stk.	June 7	5½	5½	Do. 5½ p.c. Deb.	120—125	...	...
152,600	,,	Sept. 6	9	9	Guildford Cons.	170—175	...	...
54,055	,,	,,	5	5	Do. 5 p.c. Pref.	110—115	...	...
68,250	,,	June 7	5	5	Do. 5 p.c. Deb.	113—118	...	...
156,600	,,	Aug. 23	7½	7½	Hampton Court Cons. ...	158—163	...	160
73,620	,,	Sept. 6	8½	8½	Luton Cons. 'A'	163—168	...	...
107,960	10	Sept. 20	5½	4	Mid Kent Ord.	8½— 9⅜*	...	...
230,940	Stk.	Aug. 9	10	10	Oxford & District Ord. ...	203—208	...	...
47,112	,,	,,	5	5	Do. 5 p.c. Pref.	108—113	...	...
50,000	,,	,,	6	6	Do. 6 p.c. Red. Pref. ...	110—115	...	...
126,193	,,	May 3	7½	7½	Peterborough Ord.	159—169	...	...
64,990	,,	Sept. 6	7½	6½	Redditch Ord.	125—135	...	...
166,850	,,	Aug. 9	8	8	Romford Ord.	155—165	...	...
60,000	,,	,,	4	4	Do. 4 p.c. Pref.	97—100	...	...
44,000	,,	Sept. 20	5	5	Do. 5 p.c. Deb.	113—118*	...	...
25,570	,,	Aug. 9	5½	5½	Rugby 5½ p.c. Pref.	125—130	...	...
25,000	,,	,,	6	6	Do. 6 p.c. Red. Pref. ...	106—111	...	...
42,750	,,	June 7	5½	5½	Do. 5½ p.c. Deb.	122—127	...	...
10,950	,,	Aug. 23	8	8	Ryde Ord.	158—163	...	...
136,191	,,	Aug. 9	7	5	Scarborough Ord.	115—125	...	...
27,825	,,	Aug. 23	8	8	Shanklin & Ventnor Cons. ...	158—168	...	...
270,086	,,	Sept. 6	7	7	Slough Ord.	135—140	...	...
21,000	,,	June 21	5	5	Do. 5 p.c. Deb.... ...	112—117	...	...
28,872	1	May 24	5½	5½	S. Midland Gas Cpn. Ltd. Ord.	19/—21/-	...	...
28,866	1	Sept. 6	4½	4½	Do. 4½ p.c. Red. Cum. Pref.	18/6—20/6	...	...
137,730	Stk.	Aug. 9	7	7	Southgate & Dist. 7 p.c. max.	140—145	...	...
62,500	,,	,,	5	5	Do. 5 p.c. Pref.	110—115	...	...
117,228	,,	Aug. 23	5	5	Swindon Cons.	106—111	...	...
60,425	,,	June 7	5	5	Do. 5 p.c. Deb.	110—115	...	...
64,380	,,	June 7	5	5	Torquay and Paignton 5 p.c. Pf	110—115	...	...
130,000	,,	Aug. 9	5	5	Wakefield Ord.	120—125	...	...
81,650	,,	,,	5	5	Do. 5 p.c. max.	103—108	...	...
82,000	,,	Aug.	6	6	Weymouth Ord.	103—108	...	...
98,384	,,	Aug. 9	6	6	Wolverhampton 6 p.c. Pref....	125—130	...	...
160,000	,,	June 21	5½	5½	Do. 5½ p.c. Rd. Db	108—113	...	...
370,000	,,	Aug. 9	6	4	York Cons.	102—107	...	...
90,000	,,	June 21	5	5	Do. 5 p.c. Red. Deb. ...	105—110	...	...
133,640	,,	July 19	6½	6½	Yorktown (Cam.) 5 p.c Cons.	128—133	...	...
120,000	,,	,,	5	5	Do. 5 p.c. Pref.	108—113	...	...
35,000	,,	June 7	5½	5½	Do. 5½ p.c. Deb.	123—128	...	...

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Officer-in-Charge of Training, The Gas Light and Coke Company, Assistant Head of Department of Gas Engineering and Supply, Westminster Technical Institute.

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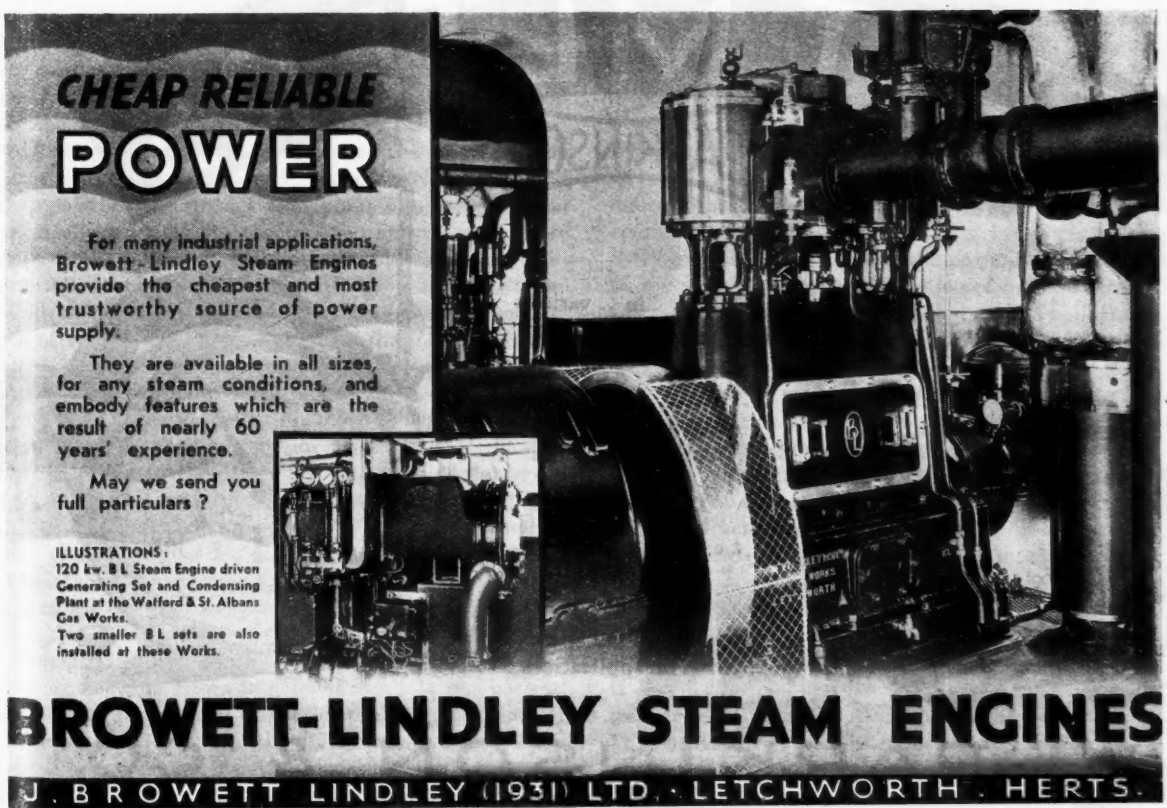
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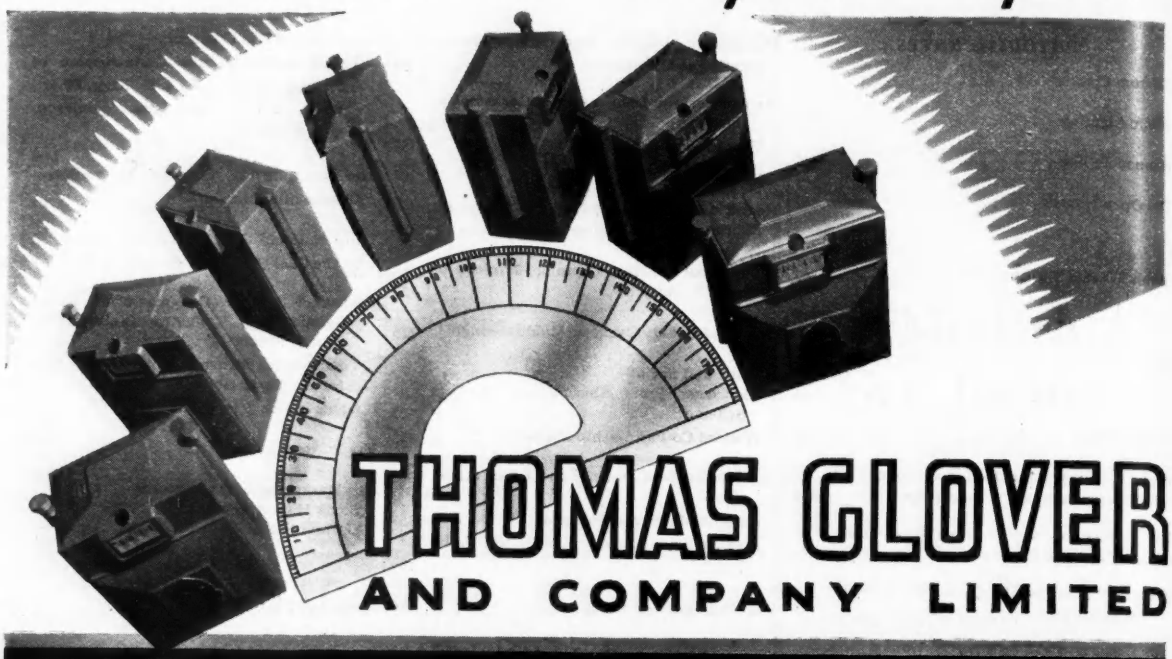

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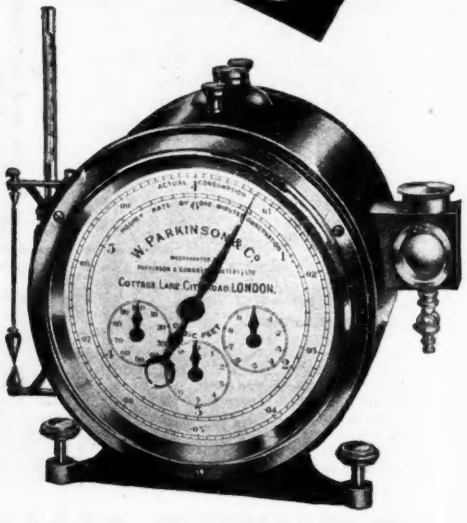

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